```
=> d his ful

     (FILE 'HOME' ENTERED AT 13:02:51 ON 15 JUN 2006)

     FILE 'HCAPLUS' ENTERED AT 13:03:16 ON 15 JUN 2006
               E US20040224251/PN
L1           1 SEA ABB=ON  PLU=ON  US20040224251/PN
               D SCAN
               SEL RN

     FILE 'REGISTRY' ENTERED AT 13:04:43 ON 15 JUN 2006
L2           7 SEA ABB=ON  PLU=ON  (110-01-0/BI OR 116331-76-1/BI OR
               303177-16-4/BI OR 347193-28-6/BI OR 448220-56-2/BI OR
               5469-26-1/BI OR 81416-37-7/BI)
               D SCAN
               E SULFONIUM, TRIPHENYL/CN
               E SULFONIUM, TRIPHENYL-/CN
L3           1 SEA ABB=ON  PLU=ON  SULFONIUM, TRIPHENYL-/CN
               D SCAN
               D RN
L4           1 SEA ABB=ON  PLU=ON  18393-55-0/RN
               D SCAN

     FILE 'HCAPLUS' ENTERED AT 13:07:31 ON 15 JUN 2006
L5          25 SEA ABB=ON  PLU=ON  L4/D OR L4/DP
L6          75 SEA ABB=ON  PLU=ON  L4
               E TOISHI K/AU
               E TOISHI KOUJI/AU
L7           8 SEA ABB=ON  PLU=ON  TOISHI KOUJI/AU
               E UETANI Y/AU
               E UETANI YASUNORI/AU
L8         112 SEA ABB=ON  PLU=ON  UETANI YASUNORI/AU
L9           1 SEA ABB=ON  PLU=ON  L7 AND L8
               D SCAN
               SEL RN

     FILE 'REGISTRY' ENTERED AT 13:13:41 ON 15 JUN 2006
L10          2 SEA ABB=ON  PLU=ON  (112047-48-0/BI OR 637035-72-4/BI)

     FILE 'LREGISTRY' ENTERED AT 13:17:45 ON 15 JUN 2006
L11            STR

     FILE 'REGISTRY' ENTERED AT 13:31:42 ON 15 JUN 2006
L12         45 SEA SSS SAM L11
               D QUE STAT
L13       4125 SEA SSS FUL L11
               SAV L13 EGW456/A

     FILE 'LREGISTRY' ENTERED AT 13:33:44 ON 15 JUN 2006
L14            STR L11

     FILE 'REGISTRY' ENTERED AT 13:41:10 ON 15 JUN 2006
               DIS

     FILE 'LREGISTRY' ENTERED AT 13:41:50 ON 15 JUN 2006
L15            STR L14

     FILE 'REGISTRY' ENTERED AT 13:43:14 ON 15 JUN 2006
L16          0 SEA SUB=L13 SSS SAM L15
               D QUE STAT
L17            STR L14

     FILE 'REGISTRY' ENTERED AT 13:46:24 ON 15 JUN 2006
L18          0 SEA SUB=L13 SSS SAM L17
L19          0 SEA SUB=L13 SSS FUL L17
L20          0 SEA SUB=L13 SSS FUL L15
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     FILE 'LREGISTRY' ENTERED AT 13:47:37 ON 15 JUN 2006
L21             STR L11

     FILE 'REGISTRY' ENTERED AT 13:51:30 ON 15 JUN 2006
L22           0 SEA SUB=L13 SSS SAM L21
L23           0 SEA SUB=L13 SSS FUL L21
                D QUE STAT
L24             STR L11

     FILE 'REGISTRY' ENTERED AT 13:55:08 ON 15 JUN 2006
L25          50 SEA SSS SAM L24
L26             SCR 1842 OR 1918
                D SCAN L2
L27             SCR 1985 OR 2021
L28          50 SEA SSS SAM L24 AND L27 NOT L26
L29             SCR 2043 OR 2023 OR 1986
L30          50 SEA SSS SAM L24 AND L27 NOT (L26 OR L29)
                D QUE STAT
L31             SCR 2077
L32             SCR 1992
L33          50 SEA SSS SAM L24 AND L27 NOT (L26 OR L29 OR L31 OR L32)
L34      252443 SEA SSS FUL L24 AND L27 NOT (L26 OR L29 OR L31 OR L32)
                SAV TEMP L34 EGW456/A

     FILE 'LREGISTRY' ENTERED AT 14:12:59 ON 15 JUN 2006
L35             STR L15

     FILE 'REGISTRY' ENTERED AT 14:13:51 ON 15 JUN 2006
L36          50 SEA SUB=L34 SSS SAM L35

     FILE 'LREGISTRY' ENTERED AT 14:15:17 ON 15 JUN 2006
L37             STR L17

     FILE 'REGISTRY' ENTERED AT 14:15:51 ON 15 JUN 2006
L38          50 SEA SUB=L34 SSS SAM L37
                D QUE STAT L17
L39           0 SEA SUB=L34 SSS SAM L17
                D QUE STAT L38
L40        1097 SEA SUB=L34 SSS FUL L37
                SAV L40 EGW456A/A

     FILE 'LREGISTRY' ENTERED AT 14:19:49 ON 15 JUN 2006
L41             STR

     FILE 'REGISTRY' ENTERED AT 14:21:12 ON 15 JUN 2006
L42           6 SEA SUB=L40 SSS SAM L41

     FILE 'LREGISTRY' ENTERED AT 14:23:37 ON 15 JUN 2006

     FILE 'REGISTRY' ENTERED AT 14:23:52 ON 15 JUN 2006
L43           0 SEA SUB=L34 SSS SAM L21

     FILE 'LREGISTRY' ENTERED AT 14:24:19 ON 15 JUN 2006
L44             STR L21

     FILE 'REGISTRY' ENTERED AT 14:25:29 ON 15 JUN 2006
L45          50 SEA SUB=L34 SSS SAM L44
L46        1775 SEA SUB=L34 SSS FUL L44
                D QUE STAT L24

     FILE 'LREGISTRY' ENTERED AT 14:27:15 ON 15 JUN 2006
L47             STR

     FILE 'REGISTRY' ENTERED AT 14:35:28 ON 15 JUN 2006
L48          50 SEA SUB=L34 SSS SAM L47
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L49         1848 SEA SUB=L34 SSS FUL L47
                 SAV L46 EGW456B/A
                 SAV L49 EGW456C/A

     FILE 'HCAPLUS' ENTERED AT 14:40:12 ON 15 JUN 2006
L50          621 SEA ABB=ON  PLU=ON  L40
L51         3572 SEA ABB=ON  PLU=ON  L46
                 S L47
L52         3835 SEA ABB=ON  PLU=ON  L49
L53          142 SEA ABB=ON  PLU=ON  L50 AND (L51 OR L52)
                 D SCAN L1
L54         9123 SEA ABB=ON  PLU=ON  (POS OR POSITIV?)(2A)(RESIST OR
                 PHOTORESIST OR PHOTO(W)RESIST)
L55           64 SEA ABB=ON  PLU=ON  L53 AND L54

     FILE 'REGISTRY' ENTERED AT 14:50:49 ON 15 JUN 2006
                 D SCAN L10

     FILE 'LREGISTRY' ENTERED AT 14:54:33 ON 15 JUN 2006
L56              STR

     FILE 'REGISTRY' ENTERED AT 15:08:34 ON 15 JUN 2006
                 DIS
                 SCR 2043
L57
L58            6 SEA SSS SAM L56 AND L57

     FILE 'LREGISTRY' ENTERED AT 15:16:23 ON 15 JUN 2006
L59              STR L56

     FILE 'REGISTRY' ENTERED AT 15:16:58 ON 15 JUN 2006
L60            8 SEA SSS SAM L59 AND L57
L61          142 SEA SSS FUL L59 AND L57
                 SAV L61 EGW456D/A

     FILE 'LREGISTRY' ENTERED AT 15:20:02 ON 15 JUN 2006
L62              STR L59

     FILE 'REGISTRY' ENTERED AT 15:21:24 ON 15 JUN 2006
L63            8 SEA SUB=L61 SSS SAM L62
                 D SCAN
                 D QUE STAT

     FILE 'LREGISTRY' ENTERED AT 15:23:07 ON 15 JUN 2006
L64              STR L62

     FILE 'REGISTRY' ENTERED AT 15:23:42 ON 15 JUN 2006
L65            8 SEA SUB=L61 SSS SAM L64
                 D SCAN
L66          142 SEA SUB=L61 SSS FUL L64

     FILE 'HCAPLUS' ENTERED AT 15:26:24 ON 15 JUN 2006
L67           73 SEA ABB=ON  PLU=ON  L66
L68           20 SEA ABB=ON  PLU=ON  L67 AND L54
L69           21 SEA ABB=ON  PLU=ON  L67 AND ((L50 OR L51 OR L52))
                 D L69 1-21 TI CC
L70           29 SEA ABB=ON  PLU=ON  L68 OR L69
L71       421694 SEA ABB=ON  PLU=ON  REPROGR?/SC,SX
L72           28 SEA ABB=ON  PLU=ON  L70 AND L71
L73           29 SEA ABB=ON  PLU=ON  L70 OR L72

     FILE 'REGISTRY' ENTERED AT 16:00:03 ON 15 JUN 2006
L74           49 SEA SSS SAM L64

     FILE 'HCAPLUS' ENTERED AT 16:00:03 ON 15 JUN 2006
L75           52 SEA ABB=ON  PLU=ON  L74
L76            5 SEA ABB=ON  PLU=ON  L55 AND (ALKALI(5A)INSOL?)
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                D SCAN
L77           78 SEA ABB=ON  PLU=ON  L50 AND L54
L78              QUE ABB=ON  PLU=ON  ALICYCL? OR (HETEROCYCL OR
                 CARBONCYCL? OR HYDROCARBON?(2A)RING)(3A)(SATD OR
                 SATURAT?)
L79           30 SEA ABB=ON  PLU=ON  L77 AND L78
L80              QUE ABB=ON  PLU=ON  ALKALI(5A)INSOLUBL?
L81            0 SEA ABB=ON  PLU=ON  L79 AND L80
L82              QUE ABB=ON  PLU=ON  HALOGEN OR HALID? OR BROMO OR
                 BROMID? OR FLUORO OR FLUORIN? OR CHLORO OR CHLORID? OR
                 IODO OR IODID?
L83           12 SEA ABB=ON  PLU=ON  L82 AND L79
L84         1243 SEA ABB=ON  PLU=ON  ((L51 OR L52)) AND L54
L85           86 SEA ABB=ON  PLU=ON  L84 AND L78 AND L82
                D QUE
L86            5 SEA ABB=ON  PLU=ON  L85 AND L80
                D SCAN
L87           45 SEA ABB=ON  PLU=ON  L73 OR L83 OR L86
L88              QUE ABB=ON  PLU=ON  CARBOCYCL?(2A)(SAT OR SATD OR
                 SATURAT?)
L89            0 SEA ABB=ON  PLU=ON  L84 AND L88 AND L82
L90           19 SEA ABB=ON  PLU=ON  L87 AND 1907-2002/PY,PRY

=> => d que stat l90
L24               STR

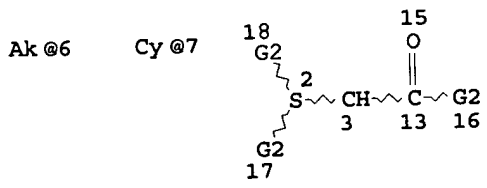
                                    Ak@6     Cy@7

G2~G1~G2
 1   2   3

VAR G1=S/I
VAR G2=6/7
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED
ECOUNT  IS M1-X6 C  AT   6
ECOUNT  IS M3-X10 C  AT   7

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS   5

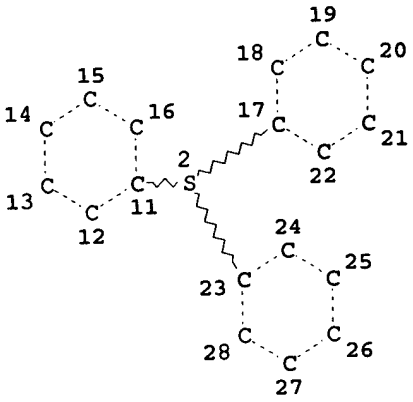
STEREO ATTRIBUTES: NONE
L26               SCR 1842 OR 1918
L27               SCR 1985 OR 2021
L29               SCR 2043 OR 2023 OR 1986
L31               SCR 2077
L32               SCR 1992
L34       252443 SEA FILE=REGISTRY SSS FUL L24 AND L27 NOT (L26 OR L29
                 OR L31 OR L32)
L37               STR
```




```
VAR G2=6/7
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED
ECOUNT  IS M1-X6 C  AT   6
ECOUNT  IS M3-X10 C  AT   7
```

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 9

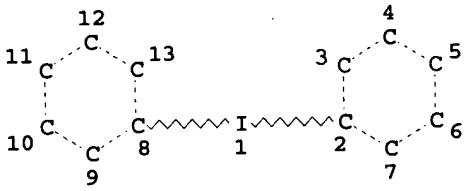
STEREO ATTRIBUTES: NONE
L40 1097 SEA FILE=REGISTRY SUB=L34 SSS FUL L37
L44 STR



NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 19

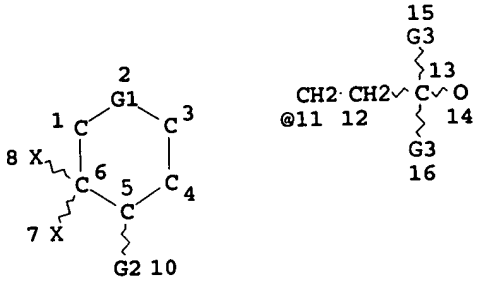
STEREO ATTRIBUTES: NONE
L46 1775 SEA FILE=REGISTRY SUB=L34 SSS FUL L44
L47 STR



NODE ATTRIBUTES:
CONNECT IS E2 RC AT 1
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RSPEC I
NUMBER OF NODES IS 13

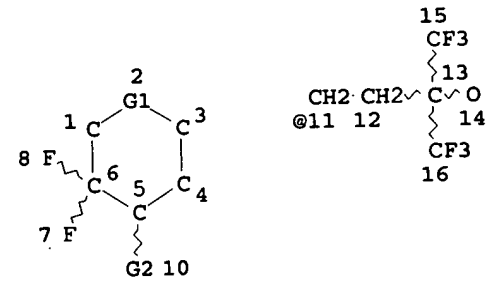
STEREO ATTRIBUTES: NONE
L49 1848 SEA FILE=REGISTRY SUB=L34 SSS FUL L47
L50 621 SEA FILE=HCAPLUS ABB=ON PLU=ON L40
L51 3572 SEA FILE=HCAPLUS ABB=ON PLU=ON L46
L52 3835 SEA FILE=HCAPLUS ABB=ON PLU=ON L49
L54 9123 SEA FILE=HCAPLUS ABB=ON PLU=ON (POS OR POSITIV?)(2A)(
RESIST OR PHOTORESIST OR PHOTO(W)RESIST)
L57 SCR 2043
L59 STR



REP G1=(0-1) C
VAR G2=O/11
VAR G3=CCL3/CBR3/CF3/CI3
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE
L61 142 SEA FILE=REGISTRY SSS FUL L59 AND L57
L64 STR



REP G1=(0-1) C
VAR G2=O/OH/11
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE
L66 142 SEA FILE=REGISTRY SUB=L61 SSS FUL L64
L67 73 SEA FILE=HCAPLUS ABB=ON PLU=ON L66
L68 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L67 AND L54
L69 21 SEA FILE=HCAPLUS ABB=ON PLU=ON L67 AND ((L50 OR L51 OR L52))
L70 29 SEA FILE=HCAPLUS ABB=ON PLU=ON L68 OR L69
L71 421694 SEA FILE=HCAPLUS ABB=ON PLU=ON REPROGR?/SC,SX
L72 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L70 AND L71
L73 29 SEA FILE=HCAPLUS ABB=ON PLU=ON L70 OR L72
L77 78 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L54
L78 QUE ABB=ON PLU=ON ALICYCL? OR (HETEROCYCL OR CARBONCYCL? OR HYDROCARBON?(2A)RING)(3A)(SATD OR SATURAT?)
L79 30 SEA FILE=HCAPLUS ABB=ON PLU=ON L77 AND L78
L80 QUE ABB=ON PLU=ON ALKALI(5A)INSOLUBL?

```
L82             QUE  ABB=ON  PLU=ON  HALOGEN OR HALID? OR BROMO OR BROM
                ID? OR FLUORO OR FLUORIN? OR CHLORO OR CHLORID? OR IODO
                 OR IODID?
L83          12 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L82 AND L79
L84        1243 SEA FILE=HCAPLUS ABB=ON  PLU=ON  ((L51 OR L52)) AND
                L54
L85          86 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L84 AND L78 AND L82
L86           5 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L85 AND L80
L87          45 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L73 OR L83 OR L86
L90          19 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L87 AND 1907-2002/PY,P
                RY
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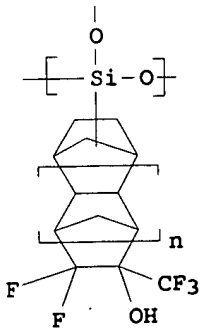
=> d l90 1-19 ibib abs hitstr hitind

L90 ANSWER 1 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:609279 HCAPLUS
DOCUMENT NUMBER: 141:148104
TITLE: Fluorinated norbornene compounds, silicon-containing derivatives of them, polysiloxanes from them, and radiation-sensitive compositions containing them
INVENTOR(S): Chiba, Takashi; Shimokawa, Tsutomu; Hayashi, Akihiro; Sugie, Norihiko
PATENT ASSIGNEE(S): JSR Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 53 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004210771	A2	20040729	JP 2003-420199	2003 1217
			<--	
PRIORITY APPLN. INFO.:			JP 2002-365297 A	2002 1217
			<--	

OTHER SOURCE(S): MARPAT 141:148104
GI



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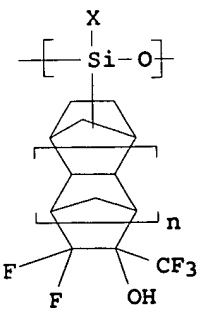


II

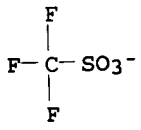
AB The compns., useful for photoresists with good sensitivity to excimer lasers, resolution, and dry-etching resistance, contain the polysiloxanes (Mw 500-1,000,000, which are alkali-insol. but become alkali-soluble by dissociation of acid-labile groups) having units I and/or II [n = 0, 1; X = H, C1-20 (halogenated) hydrocarbyl, halo, amino] and radiation-sensitive photoacid generators.

IT **66003-78-9**, Triphenylsulfonium trifluoromethanesulfonate
144317-44-2, Triphenylsulfonium nonafluoro-n-butanesulfonate **227199-92-0 474516-38-6**
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; radiation-sensitive photoresists containing polysiloxanes bearing fluorinated norbornene groups with good sensitivity, resolution, and dry etching resistance)

RN 66003-78-9 HCAPLUS
CN Sulfonium, triphenyl-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

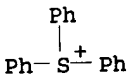
CM 1

CRN 37181-39-8
CMF C F3 O3 S



CM 2

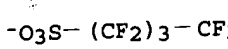
CRN 18393-55-0
CMF C18 H15 S



RN 144317-44-2 HCAPLUS
CN Sulfonium, triphenyl-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

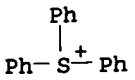
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S



CM 2

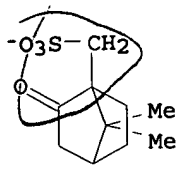
CRN 18393-55-0
CMF C18 H15 S



RN 227199-92-0 HCAPLUS
CN Sulfonium, triphenyl-, salt with 7,7-dimethyl-2-oxobicyclo[2.2.1]heptane-1-methanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

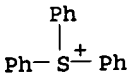
CM 1

CRN 55077-28-6
CMF C10 H15 O4 S



CM 2

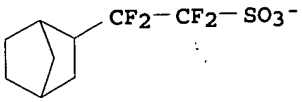
CRN 18393-55-0
CMF C18 H15 S



RN 474516-38-6 HCAPLUS
CN Sulfonium, triphenyl-, salt with α,α,β,β-tetrafluorobicyclo[2.2.1]heptane-2-ethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

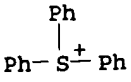
CM 1

CRN 474516-37-5
CMF C9 H11 F4 O3 S



CM 2

CRN 18393-55-0
CMF C18 H15 S

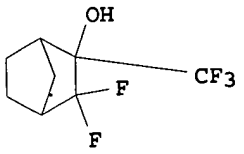


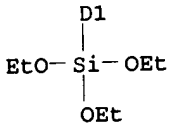
IT **727425-13-0P 727425-14-1P 727425-16-3P**
727425-17-4P 727425-19-6P 727425-20-9P
727425-22-1P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(radiation-sensitive photoresists containing polysiloxanes bearing fluorinated norbornene groups with good sensitivity, resolution, and dry etching resistance)

RN 727425-13-0 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 3,3-difluoro-5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)bicyclo[2.2.1]heptan-2-ol (9CI) (CA INDEX NAME)

CM 1

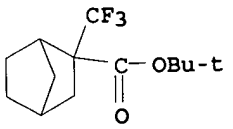
CRN 727425-11-8
CMF C14 H23 F5 O4 Si
CCI IDS

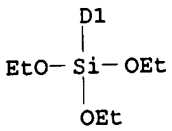




CM 2

CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

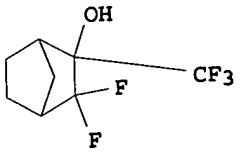


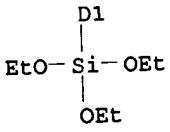


RN 727425-14-1 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 3,3-difluoro-5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)bicyclo[2.2.1]heptan-2-ol and 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol (9CI) (CA INDEX NAME)

CM 1

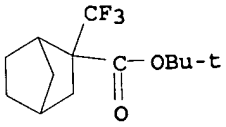
CRN 727425-11-8
CMF C14 H23 F5 O4 Si
CCI IDS

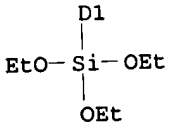




CM 2

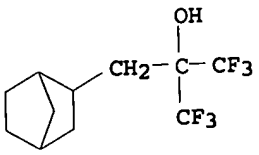
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

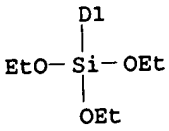




CM 3

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS

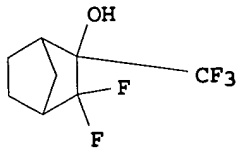


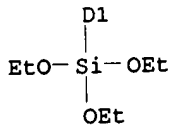


RN 727425-16-3 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 3,3-difluoro-5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)bicyclo[2.2.1]heptan-2-ol and triethoxy[5,5,6(or 5,6,6)-trifluoro-6(or 5)-(heptafluoropropoxy)bicyclo[2.2.1]hept-2-yl]silane (9CI) (CA INDEX NAME)

CM 1

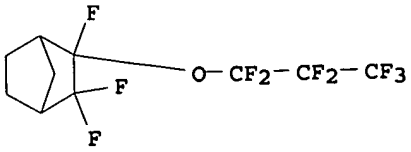
CRN 727425-11-8
CMF C14 H23 F5 O4 Si
CCI IDS

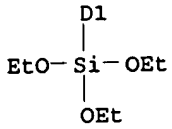




CM 2

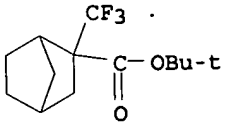
CRN 677308-22-4
CMF C16 H22 F10 O4 Si
CCI IDS

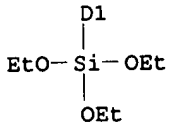




CM 3

CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

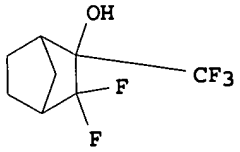


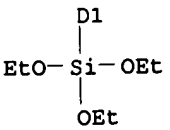


RN 727425-17-4 HCAPLUS
CN 1,4:5,8-Dimethanonaphthalene-2-carboxylic acid, decahydro-6(or 7)-(triethoxysilyl)-, 1,1-dimethylethyl ester, polymer with 3,3-difluoro-5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)bicyclo[2.2.1]heptan-2-ol and triethoxymethylsilane (9CI) (CA INDEX NAME)

CM 1

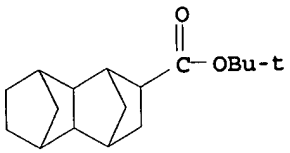
CRN 727425-11-8
CMF C14 H23 F5 O4 Si
CCI IDS

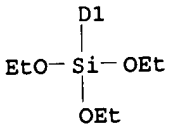




CM 2

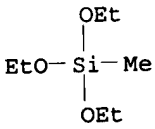
CRN 365546-67-4
CMF C23 H40 O5 Si
CCI IDS





CM 3

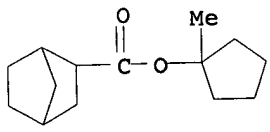
CRN 2031-67-6
CMF C7 H18 O3 Si

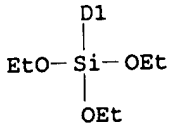


RN 727425-19-6 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-, 1-methylcyclopentyl ester, polymer with 3,3-difluoro-5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)bicyclo[2.2.1]heptan-2-ol and triethoxymethylsilane (9CI) (CA INDEX NAME)

CM 1

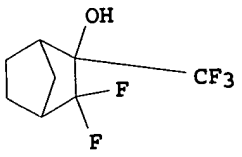
CRN 727425-18-5
CMF C20 H36 O5 Si
CCI IDS

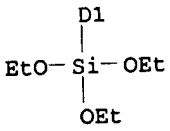




CM 2

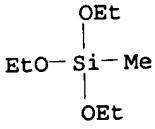
CRN 727425-11-8
CMF C14 H23 F5 O4 Si
CCI IDS





CM 3

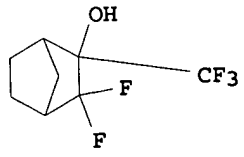
CRN 2031-67-6
CMF C7 H18 O3 Si

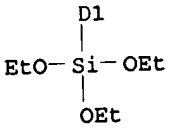


RN 727425-20-9 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-, 1,1-dimethylethyl ester, polymer with 3,3-difluoro-5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)bicyclo[2.2.1]heptan-2-ol and triethoxymethylsilane (9CI) (CA INDEX NAME)

CM 1

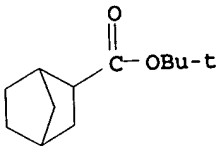
CRN 727425-11-8
CMF C14 H23 F5 O4 Si
CCI IDS

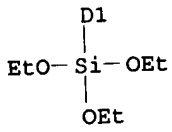




CM 2

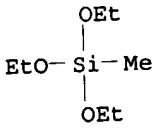
CRN 365546-63-0
CMF C18 H34 O5 Si
CCI IDS





CM 3

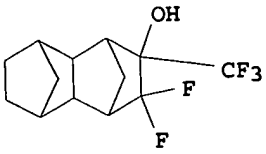
CRN 2031-67-6
CMF C7 H18 O3 Si

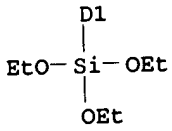


RN 727425-22-1 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 3,3-difluorodecahydro-6(or 7)-(triethoxysilyl)-2-(trifluoromethyl)-1,4:5,8-dimethanonaphthalen-2-ol and 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol (9CI) (CA INDEX NAME)

CM 1

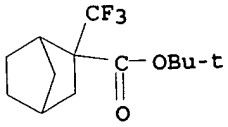
CRN 727425-12-9
CMF C19 H29 F5 O4 Si
CCI IDS

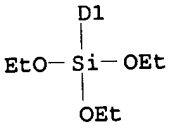




CM 2

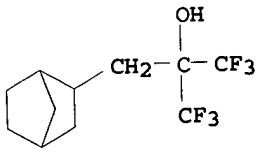
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

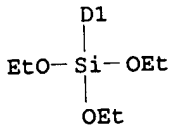




CM 3

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS





IC ICM C07F007-18
ICS C07C035-52; C08G077-24; G03F007-039; G03F007-075; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)

Section cross-reference(s): 24, 38

IT **66003-78-9**, Triphenylsulfonium trifluoromethanesulfonate **144317-44-2**, Triphenylsulfonium nonafluoro-n-butanesulfonate **227199-92-0 474516-38-6**
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; radiation-sensitive photoresists containing polysiloxanes bearing fluorinated norbornene groups with good sensitivity, resolution, and dry etching resistance)

IT **727425-13-0P 727425-14-1P 727425-16-3P 727425-17-4P 727425-19-6P 727425-20-9P 727425-22-1P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(radiation-sensitive photoresists containing polysiloxanes bearing fluorinated norbornene groups with good sensitivity, resolution, and dry etching resistance)

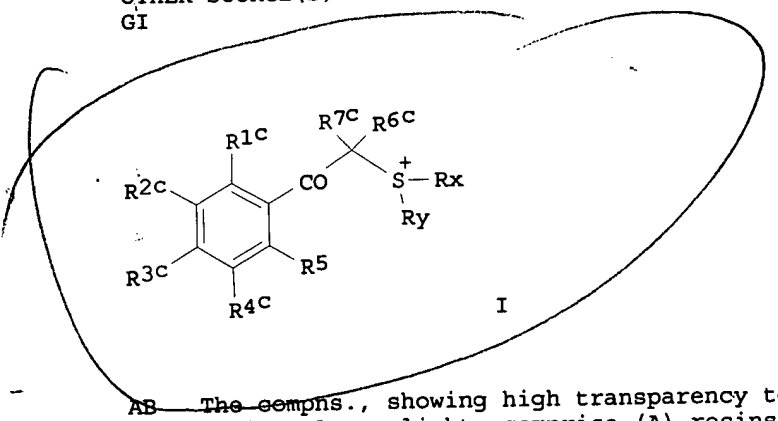
L90 ANSWER 2 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:389962 HCAPLUS
DOCUMENT NUMBER: 140:383119
TITLE: Chemically amplified **positive resist** compositions showing stable post-exposure and -coating delay
INVENTOR(S): Sato, Kenichiro
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 68 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004138663	A2	20040513	JP 2002-300750 <--	2002 1015

PRIORITY APPLN. INFO.: JP 2002-300750 <-- 2002 1015

OTHER SOURCE(S): MARPAT 140:383119

GI



I

AB The compns., showing high transparency to far-UV light especially ArF excimer laser light, comprise (A) resins increasing solubility in acids by acid action and having unit CH2CR1CO2LZ [R1 = H, Me; L = single bond, alkylene, ether, ester, and/or CO; Z = CO2H, OH, COCH2COR4 (R4 = hydrocarbyl)], CH2CR2ACO2ALG (R2 = H, Me; A = single bond, bridging group; ALG = prescribed **alicyclic** substituent etc.), and CH2CR3A3Z3(OH)p [R3 = H, Me; A3 = single bond, bivalent

bridging group; Z3 = (p + 1)-valent **alicyclic** hydrocarbyl; p = 1-3], (B) radiation-sensitive acid generators I (R1c-R5c = H, alkyl, alkoxy, halo; R6c, R7c = H, alkyl, aryl; Rx, Ry = alkyl, 2-oxoalkyl, alkoxycarbonylmethyl, etc.; X- = sulfonate, carboxylate, sulfonylimide), and (C) solvents.

IT **474510-73-1**
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generators; **pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

RN 474510-73-1 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

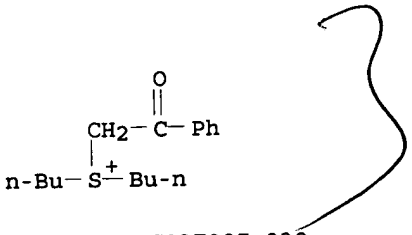
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S

$^{-}O_3S-(CF_2)_3-CF_3$

CM 2

CRN 19023-62-2
CMF C16 H25 O S



IC ICM G03F007-039
ICS C08F220-28; G03F007-004; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38

ST amplified **pos photoresist** post exposure delay stability; argon fluoride excimer transparency **pos resist**; phenacylsulfonium photoacid generator amplified photoresist process margin

IT Photoresists
(UV, far-UV, **pos.**-working; **pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

IT **Resists**
(**pos.**-working, chemical amplified; **pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

IT 66003-78-9, Triphenylsulfonium trifluoromethanesulfonate
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid cgenerators; **pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

IT 301664-71-1P 301664-72-2P 398141-19-0P
RL: CAT (Catalyst use); IMF (Industrial manufacture); TEM

(Technical or engineered material use); PREP (Preparation); USES (Uses)
(photoacid generators; **pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

IT 144317-44-2, Triphenylsulfonium nonafluorobutanesulfonate 258872-05-8, Diphenyl(4-tert-butylphenyl)sulfonium nonafluorobutanesulfonate 454471-07-9 454471-11-5 470482-89-4 **474510-73-1**
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generators; **pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

IT 19158-66-8P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(**pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

IT 683809-88-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

IT 70-11-1, Phenacyl **bromide** 110-01-0, Tetrahydrothiophene 29420-49-3, Potassium perfluorobutanesulfonate
RL: RCT (Reactant); RACT (Reactant or reagent)
(**pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

IT 680223-07-8 680223-09-0 683809-90-7 683809-91-8 683811-62-3
RL: TEM (Technical or engineered material use); USES (Uses)
(**pos. resists** showing wide process margin and stable post-exposure and -coating delay for ArF excimer laser-utilized photofabrication)

L90 ANSWER 3 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:330252 HCAPLUS
DOCUMENT NUMBER: 140:347515
TITLE: Silicon compounds, polysiloxanes from them, and radiation-sensitive resin compositions containing the polysiloxanes
INVENTOR(S): Chiba, Takashi; Iwasawa, Haruo; Hayashi, Akihiro; Shimokawa, Tsutomu
PATENT ASSIGNEE(S): JSR Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 59 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004123793	A2	20040422	JP 2002-285855	2002 0930
			<--	
PRIORITY APPLN. INFO.:			JP 2002-285855	2002 0930

<--

OTHER SOURCE(S): MARPAT 140:347515

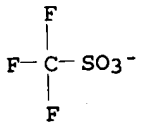
AB R1SiR12X1C(CHmF3-m)(CHnF3-n)OSiR23 [I; X1 = (un)substituted C2-20 hydrocarbylene; R1, R2 = H, halo, C1-20 alkoxy, cycloalkoxy, C1-20 (halo)hydrocarbyl; 2 or 3 of R1 and R2 = halo, C1-20 alkoxy, cycloalkoxy; m, n = 0-3; n + m < 6] are claimed. Polysiloxanes with Mn 500-1,000,000 (based on polystyrene stds., measured by GPC) manufactured by polymerizing I are also claimed. The radiation-sensitive resin compns. contain (a) among the polysiloxanes, those which are insol. or slightly soluble in alkalis, bear acid-dissociable group and become alkali-soluble after the groups are dissociated and (B) radiation-sensitive acid generators. The compns. show high transparency to ≤193-nm light especially 157-nm F2 excimer laser, high resolution, and good dry-etching resistance.

IT **66003-78-9**, Triphenylsulfonium trifluoromethanesulfonate
144317-44-2, Triphenylsulfonium nonafluoro-n-butane sulfonate **227199-92-0 474516-38-6**
RL: CAT (Catalyst use); USES (Uses)
(silyl ether group-containing compds. and polysiloxanes therefrom for resists with high transmittance to ≤193-nm light and good dry etching resistance)

RN 66003-78-9 HCAPLUS
CN Sulfonium, triphenyl-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

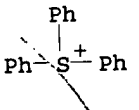
CM 1

CRN 37181-39-8
CMF C F3 O3 S



CM 2

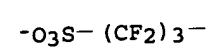
CRN 18393-55-0
CMF C18 H15 S



RN 144317-44-2 HCAPLUS
CN Sulfonium, triphenyl-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

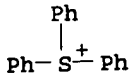
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S



CM 2

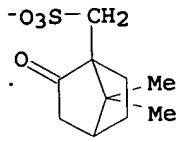
CRN 18393-55-0
CMF C18 H15 S



RN 227199-92-0 HCAPLUS
CN Sulfonium, triphenyl-, salt with 7,7-dimethyl-2-oxobicyclo[2.2.1]heptane-1-methanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

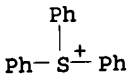
CM 1

CRN 55077-28-6
CMF C10 H15 O4 S



CM 2

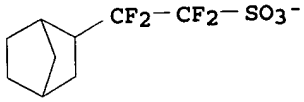
CRN 18393-55-0
CMF C18 H15 S



RN 474516-38-6 HCAPLUS
CN Sulfonium, triphenyl-, salt with α,α,β,β-tetrafluorobicyclo[2.2.1]heptane-2-ethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

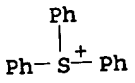
CM 1

CRN 474516-37-5
CMF C9 H11 F4 O3 S



CM 2

CRN 18393-55-0
CMF C18 H15 S

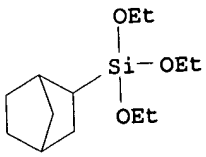


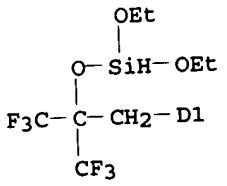
IT **681007-59-0P 681007-62-5P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(silyl ether group-containing compds. and polysiloxanes therefrom for resists with high transmittance to ≤193-nm light and good dry etching resistance)

RN 681007-59-0 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with [5(or 6)-[2-[(diethoxysilyl)oxy]-3,3,3-trifluoro-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl]triethoxysilane, 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol and triethoxy[5,5,6(or 5,6,6)-trifluoro-6(or 5)-(heptafluoropropoxy)bicyclo[2.2.1]hept-2-yl]silane (9CI) (CA INDEX NAME)

CM 1

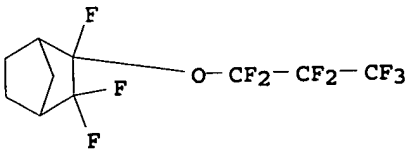
CRN 681007-58-9
CMF C21 H38 F6 O6 Si2
CCI IDS

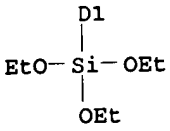




CM 2

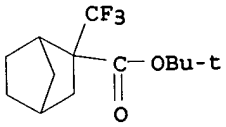
CRN 677308-22-4
CMF C16 H22 F10 O4 Si
CCI IDS

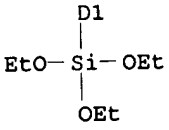




CM 3

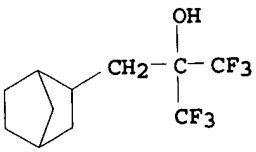
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

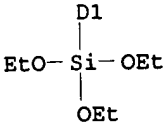




CM 4

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS



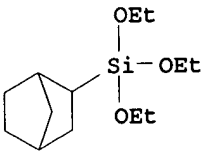


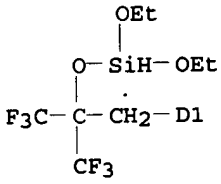
RN 681007-62-5 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with [5(or 6)-[2-[(diethoxysilyl)oxy]-3,3,3-trifluoro-2-

(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl]triethoxysilane and triethoxy[5,5,6(or 5,6,6)-trifluoro-6(or 5)-(heptafluoropropoxy)bicyclo[2.2.1]hept-2-yl]silane (9CI) (CA INDEX NAME)

CM 1

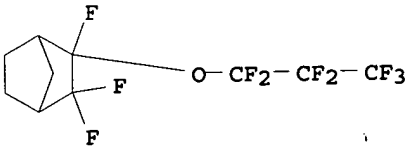
CRN 681007-58-9
CMF C21 H38 F6 O6 Si2
CCI IDS

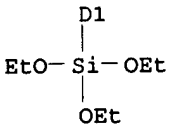




CM 2

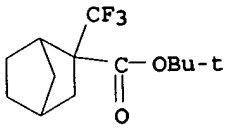
CRN 677308-22-4
CMF C16 H22 F10 O4 Si
CCI IDS

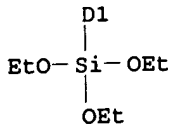




CM 3

CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS





IC ICM C08G077-50
ICS C07F007-18; G03F007-039; G03F007-075; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 37
IT **66003-78-9**, Triphenylsulfonium trifluoromethanesulfonate **144317-44-2**, Triphenylsulfonium nonafluoro-n-butane sulfonate **227199-92-0 474516-38-6**
RL: CAT (Catalyst use); USES (Uses)
(silyl ether group-containing compds. and polysiloxanes therefrom for resists with high transmittance to ≤193-nm light and good dry etching resistance)
IT **681007-59-0P** 681007-60-3P 681007-61-4P **681007-62-5P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(silyl ether group-containing compds. and polysiloxanes therefrom for resists with high transmittance to ≤193-nm light and good dry etching resistance)

L90 ANSWER 4 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:287063 HCAPLUS
DOCUMENT NUMBER: 140:329526
TITLE: Fluorine-containing norbornenes, their silicon-containing derivatives, polysiloxanes with fluorine-containing norbornane backbones, and radiation-sensitive compositions for resists
INVENTOR(S): Chiba, Takashi; Shimokawa, Tsutomu; Hayashi, Akihiro
PATENT ASSIGNEE(S): JSR Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 81 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004107277	A2	20040408	JP 2002-273899	2002 0919

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PRIORITY APPLN. INFO.: JP 2002-273899 2002 0919

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OTHER SOURCE(S): MARPAT 140:329526
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT
*

AB The F-containing norbornenes are represented by the general formula I (Z1 = H, F, C1-4 monovalent fluorinated hydrocarbyl; not all of Z1 is H; R1 = CH2OH, AR'; A = O, CF2; R' = C1-10 monovalent hydrocarbyl which may be halogenated or substituted with OH; n = 0, 1). The Si-containing derivs. of I are represented by the general formulas II and III [X1 = H, C1-20 (halogenated) monovalent hydrocarbyl, halo, amino; Y1 = C1-20 (halogenated) monovalent hydrocarbyl; X2 = H, C1-20 (halogenated) monovalent hydrocarbyl, halo, amino, C1-20 alkoxyl; Z1 = same as I; x = 0-2 integer, y = 3-5 integer; n = 0, 1]. The polysiloxanes prepared from II and/or III, with polystyrene-based Mw 500-1,000,000 by GPC, is also claimed. The radiation-sensitive resin compns. contain, (A) among the polysiloxanes, those which are insol. or slightly soluble in alkalis, bear acid-dissociable group and become alkali-soluble after the groups are dissociated and (B) radiation-sensitive acid generators.

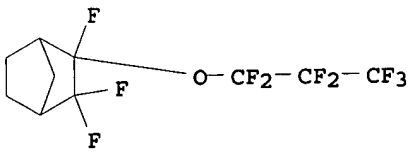
IT **677308-25-7P 677308-26-8P 677308-28-0P 677308-30-4P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(F-containing norbornenes, their Si-containing derivs., and polysiloxanes with F-containing norbornane backbones for resists with high transmittance to ≤200-nm radiation)

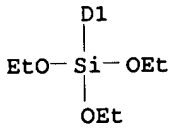
RN 677308-25-7 HCAPLUS

CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol and triethoxy[5,5,6(or 6,6,5)-trifluoro-6(or 5)-(heptafluoropropoxy)bicyclo[2.2.1]hept-2-yl]silane (9CI) (CA INDEX NAME)

CM 1

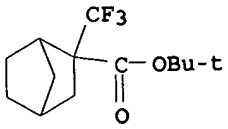
CRN 677308-22-4
CMF C16 H22 F10 O4 Si
CCI IDS

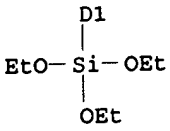




CM 2

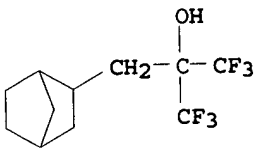
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

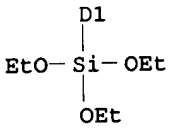




CM 3

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS

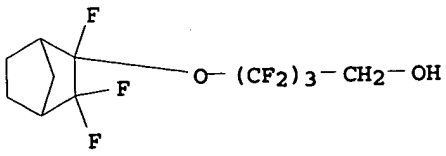


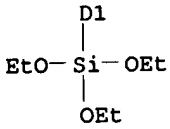


RN 677308-26-8 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol and 4-[[2,3,3-trifluoro-5(or 6)-(triethoxysilyl)bicyclo[2.2.1]hept-2-yl]oxy]-1-butanol (9CI) (CA INDEX NAME)

CM 1

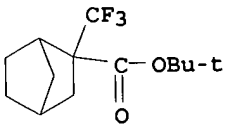
CRN 677308-23-5
CMF C17 H25 F9 O5 Si
CCI IDS

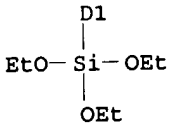




CM 2

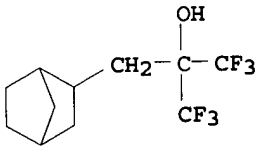
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

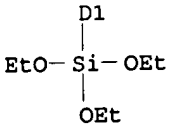




CM 3

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS



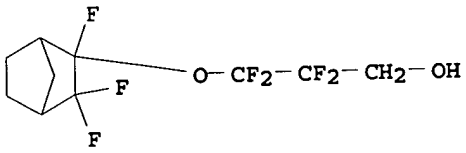


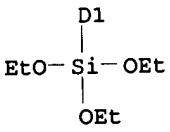
RN 677308-28-0 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 2,2,3,3-tetrafluoro-3-[[2,3,3-trifluoro-5(or 6)-

(triethoxysilyl)bicyclo[2.2.1]hept-2-yl]oxy]-1-propanol and 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol (9CI) (CA INDEX NAME)

CM 1

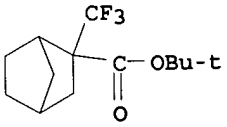
CRN 677308-27-9
CMF C16 H25 F7 O5 Si
CCI IDS

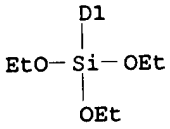




CM 2

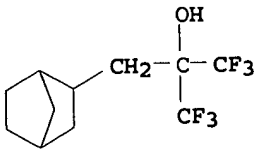
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

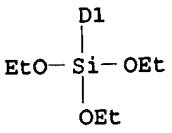




CM 3

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS

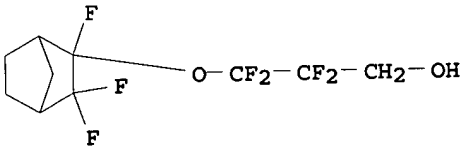


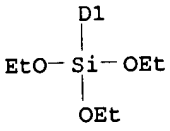


RN 677308-30-4 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 2,2,3,3,4,4-hexafluoro-4-[[2,3,3-trifluoro-5(or 6)-(triethoxysilyl)bicyclo[2.2.1]hept-2-yl]oxy]-1-butanol, 2,2,3,3-tetrafluoro-3-[[2,3,3-trifluoro-5(or 6)-(triethoxysilyl)bicyclo[2.2.1]hept-2-yl]oxy]-1-propanol and 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol (9CI) (CA INDEX NAME)

CM 1

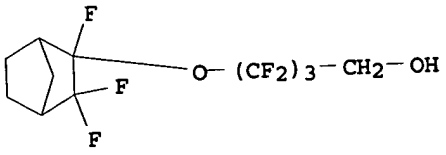
CRN 677308-27-9
CMF C16 H25 F7 O5 Si
CCI IDS

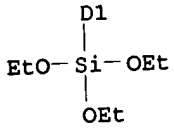




CM 2

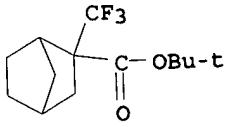
CRN 677308-23-5
CMF C17 H25 F9 O5 Si
CCI IDS

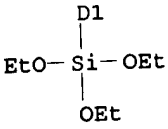




CM 3

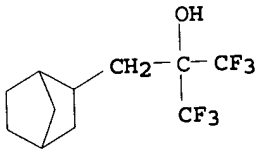
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

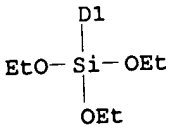




CM 4

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS





IT **66003-78-9**, Triphenylsulfonium trifluoromethanesulfonate
144317-44-2, Triphenylsulfonium nonafluoro-n-butane
sulfonate **227199-92-0** **474516-38-6**
RL: CAT (Catalyst use); USES (Uses)

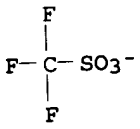
Les Henderson 571-272-2538

(photoacid generator; F-containing norbornenes, their Si-containing derivs., and polysiloxanes with F-containing norbornane backbones for resists with high transmittance to ≤200-nm radiation)

RN 66003-78-9 HCAPLUS
CN Sulfonium, triphenyl-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

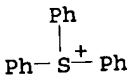
CM 1

CRN 37181-39-8
CMF C F3 O3 S



CM 2

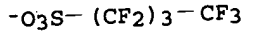
CRN 18393-55-0
CMF C18 H15 S



RN 144317-44-2 HCAPLUS
CN Sulfonium, triphenyl-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

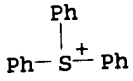
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S



CM 2

CRN 18393-55-0
CMF C18 H15 S

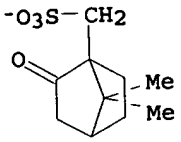


RN 227199-92-0 HCAPLUS
CN Sulfonium, triphenyl-, salt with 7,7-dimethyl-2-oxobicyclo[2.2.1]heptane-1-methanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

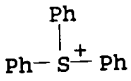
CRN 55077-28-6

CMF C10 H15 O4 S



CM 2

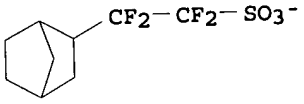
CRN 18393-55-0
CMF C18 H15 S



RN 474516-38-6 HCAPLUS
CN Sulfonium, triphenyl-, salt with α,α,β,β-tetrafluorobicyclo[2.2.1]heptane-2-ethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

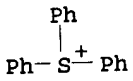
CM 1

CRN 474516-37-5
CMF C9 H11 F4 O3 S



CM 2

CRN 18393-55-0
CMF C18 H15 S



IC ICM C07C043-192
ICS C07C043-196; C07F007-12; C07F007-18; C08G077-14; C08G077-24; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 24, 37
IT **677308-25-7P 677308-26-8P 677308-28-0P 677308-30-4P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(F-containing norbornenes, their Si-containing derivs., and polysiloxanes with F-containing norbornane backbones for resists with high transmittance to ≤200-nm radiation)
IT **66003-78-9**, Triphenylsulfonium trifluoromethanesulfonate

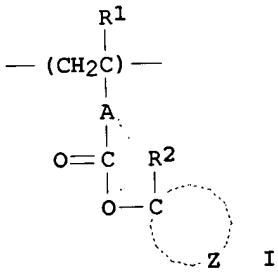
144317-44-2, Triphenylsulfonium nonafluoro-n-butane sulfonate **227199-92-0 474516-38-6**
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; F-containing norbornenes, their Si-containing derivs., and polysiloxanes with F-containing norbornane backbones for resists with high transmittance to ≤200-nm radiation)

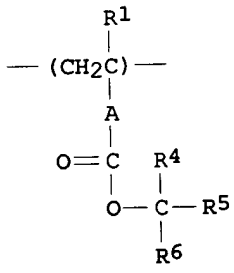
L90 ANSWER 5 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:269885 HCAPLUS
DOCUMENT NUMBER: 140:311995
TITLE: **Positive resist** composition and pattern formation method
INVENTOR(S): Nishiyama, Fumiyuki; Sato, Kenichiro; Kodama, Kunihiko
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 56 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

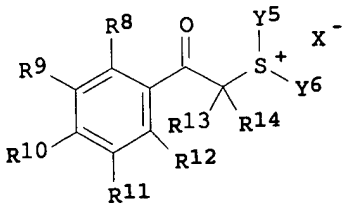
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004063827	A1	20040401	US 2003-669603	2003 0925
JP 2004145298	A2	20040520	JP 2003-315478	2003 0908

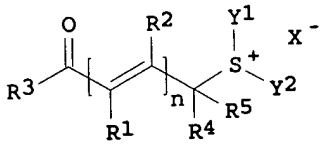
PRIORITY APPLN. INFO.:
JP 2002-287252 A 2002 0930
JP 2002-287393 A 2002 0930

GI


I


II


III


IV

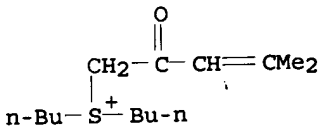
AB A **pos. resist** composition comprising: (A) a resin having **alicyclic** hydrocarbon groups in side chains, containing repeating units of general formulas I and II (R1 = H, alkyl; A = linkage group, R2 = C1-4-alkyl; Z = group forming an **alicyclic** hydrocarbon group together with the carbon atom; R4-R6 = hydrocarbon group, **alicyclic** hydrocarbon) which increases the solubility in an alkali developing solution by the action of an acid; and (B) a particular sulfonium compound having a general structures of formulas III and IV (R1-R3 = H, alkyl, alkenyl, aryl, alkoxy; R4, R5 = H, cyano, alkyl, aryl, alkoxy; Y1, Y2 = alkyl, aryl, aralkyl, heteroatom-containing aromatic group; n = 1-4; R8-R12 = H, nitro, **halogen**, alkyl, alkoxy, alkyloxycarbonyl, aryl, acylamino, with the proviso that at least two of R8-R12 may be bonded with each other to form a ring; R13 = H, cyano, alkyl, aryl; R14 = alkyl, aryl; Y5, Y6 = alkyl, aryl, aralkyl, heteroatom-containing aromatic group, Y5 and Y6 may be bonded with each other to form a ring; X- = non-nucleophilic anion) which is capable of generating an acid upon irradiation with an actinic ray or radiation. The object of the present invention is to provide a **pos. resist** composition that is used suitably in micro-photofabrication utilizing far UV light, notably ArF excimer laser beam, and offers excellent line edge roughness performance and excellent pattern collapse performance.

IT **524959-16-8 610301-07-0 610301-16-1**
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; **pos. resist** composition and pattern formation method)

RN 524959-16-8 HCAPLUS
CN Sulfonium, dibutyl(4-methyl-2-oxo-3-pentenyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

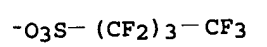
CM 1

CRN 524959-15-7
CMF C14 H27 O S



CM 2

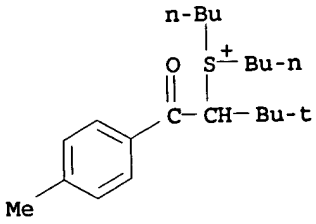
CRN 45187-15-3
CMF C4 F9 O3 S



RN 610301-07-0 HCAPLUS
CN Sulfonium, dibutyl[2,2-dimethyl-1-(4-methylbenzoyl)propyl]-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

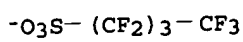
CM 1

CRN 610301-06-9
CMF C21 H35 O S



CM 2

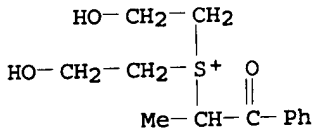
CRN 45187-15-3
CMF C4 F9 O3 S



RN 610301-16-1 HCAPLUS
CN Sulfonium, bis(2-hydroxyethyl)(1-methyl-2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 610301-15-0
CMF C13 H19 O3 S



CM 2

CRN 45187-15-3
CMF C4 F9 O3 S

IC ICM C08K005-41
INCL 524155000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
ST **pos resist** compn photolithog UV pattern formation method
IT Polysiloxanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(KP-341, Troysol S-366; **pos. resist** composition and pattern formation method)
IT Photolithography
(UV; **pos. resist** composition and pattern formation method)
IT **Positive photoresists**
(**pos. resist** composition and pattern formation

method)

IT 470482-89-4 524959-11-3 **524959-16-8** 524959-18-0
524959-28-2 **610301-07-0** 610301-08-1 610301-09-2
610301-13-8 **610301-16-1** 610301-21-8 610301-28-5
610301-34-3 676502-09-3 676502-10-6 676502-11-7
676502-13-9 676502-14-0 676502-16-2 676502-18-4
676502-20-8 676502-22-0 676502-24-2 676502-25-3
676502-26-4 676502-27-5 676502-29-7
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; **pos. resist** composition
and pattern formation method)

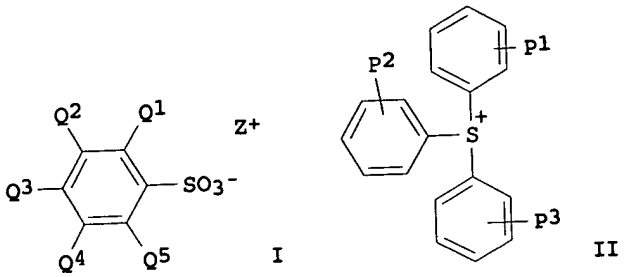
IT 479081-07-7P 479081-08-8P 479081-10-2P 479081-11-3P
479081-12-4P 479081-13-5P 479081-14-6P 479081-15-7P
479081-18-0P 479081-19-1P 479081-21-5P 479081-22-6P
479081-24-8P 676502-04-8P 676502-05-9P 676502-07-1P
676502-08-2P 676522-31-9P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**pos. resist** composition and pattern formation method)

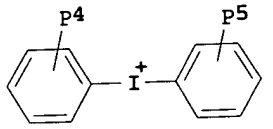
IT 60-80-0, Antipyrine 102-82-9, Tri-n-butylamine 3001-72-7, 1,5-Diazabicyclo[4.3.0]-5-nonene 9016-45-9, Polyoxyethylene nonyl phenyl ether 24544-04-5, 2,6-Diisopropylaniline 36631-19-3, Triphenylimidazole 41556-26-7, Bis(1,2,2,6,6,-penta methyl-4-piperidyl)sebacate 137462-24-9, Megafac F176 216679-67-3, Megafac R08
RL: TEM (Technical or engineered material use); USES (Uses)
(**pos. resist** composition and pattern formation method)

L90 ANSWER 6 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:219910 HCAPLUS
DOCUMENT NUMBER: 140:278422
TITLE: Chemical amplification type resist composition
INVENTOR(S): Takata, Yoshiyuki; Yoshida, Isao; Nakanishi, Hirotoshi
PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan
SOURCE: U.S. Pat. Appl. Publ., 22 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004053171	A1	20040318	US 2003-657149 <--	2003 0909
CN 1488996	A	20040414	CN 2003-156561 <--	2003 0909
JP 2004126572	A2	20040422	JP 2003-319438 <--	2003 0911
PRIORITY APPLN. INFO.:			JP 2002-266539 A <--	2002 0912

OTHER SOURCE(S): MARPAT 140:278422
GI

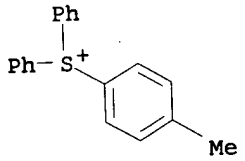




AB The present invention provides a chemical amplification type **pos. resist** composition comprising (1) a nitrogen containing compound of the formula A(-X-N(R13)C(=O)R14)n or A(-X-C(=O)N(R15)R16)n (A = **alicyclic** hydrocaron group; X = C1-4 alkylene, single bond; R13-16 = H, C1-12 alkyl, C3-12 cycloalkyl, C1-12 haloalkyl, etc.; n = 1-5); (2) resin which contains a structural unit having an acid labile group and which itself is **insol.** or poorly soluble in an **alkali** aqueous solution but becomes soluble in an alkali aqueous solution by the action of an acid; and (3) an acid generator of the formula I (Q1-5 =H, hydroxyl, C1-12 alkyl, alkoxy; Z+ = II (P1-3 = H, hydroxyl, C1-6 allyl and alkoxy), III (P4,5 = H, hydroxyl, C1-6 allyl and alkoxy), P6P7S+-CH(P8)C(=O)P9 (P6,7 = C1-6 alkyl, C3-10 cycloalkyl, etc.; P8 = H; P9 = C1-6 alkyl, C3-10 cycloalkyl, aromatic group, etc.)).

IT **3744-09-0**
RL: RCT (Reactant); RACT (Reactant or reagent)
(chemical amplification type resist composition containing)

RN 3744-09-0 HCAPLUS
CN Sulfonium, (4-methylphenyl)diphenyl-, iodide (9CI) (CA INDEX NAME)



● I^-

IC ICM G03C005-00
INCL 430311000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 99-63-8, Isophthaloyl **chloride** 101-83-7, Dicyclohexylamine 108-91-8, Cyclohexylamine, reactions

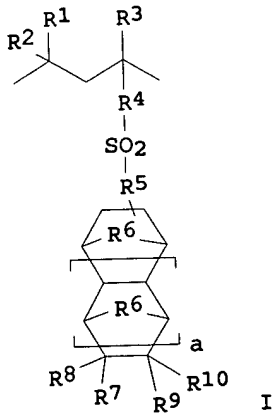
Les Henderson 571-272-2538

768-94-5, 1-Adamantanamine 2719-27-9, Cyclohexylcarbonyl chloride 3282-30-2, Pivaloyl chloride 3744-09-0 656823-65-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(chemical amplification type resist composition containing)

L90 ANSWER 7 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:180145 HCAPLUS
DOCUMENT NUMBER: 140:225800
TITLE: Chemically amplified photoresists and method for pattern formation
INVENTOR(S): Harada, Yuji; Hatakeyama, Jun; Kawai, Yoshio; Sasako, Masaru; Endo, Masataka; Kishimura, Shinji; Maeda, Kazuhiko; Otani, Michitaka; Komoritani, Haruhiko
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan; Matsushita Electric Industrial Co., Ltd.; Central Glass Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004067972	A2	20040304	JP 2002-233045	2002 0809
			<--	
PRIORITY APPLN. INFO.:			JP 2002-233045	2002 0809
			<--	

GI



I

AB The photoresists contain polymers of Mw 1000-500,000 having repeating units I [R1-R3 = H, F, (fluorinated) C1-40 alkyl; R4 = single bond, (fluorinated) C1-40 alkylene; R5 = single bond, O, (fluorinated) C1-40 alkylene; R6 = methylene, O, S; R7-R10 = H, F, fluorinated C1-4 alkyl, R11OR12, R11CO2R12, OR12; R11 = single bond, (fluorinated) C1-40 alkylene; R12 = H, acid-labile group; a

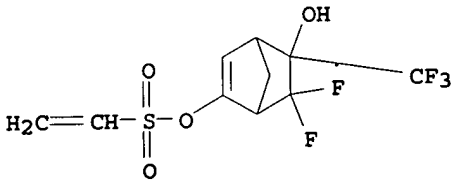
= 0, 1]. The photoresists are patternwise exposed to 100-180-nm or 1-30-nm high-energy beams (e.g., F2 laser beams, Ar2 laser beams, soft x rays) and developed (after post-exposure baking).

IT **666258-16-8P 666258-18-0P 666258-19-1P**
666258-20-4P 666258-21-5P 666258-22-6P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical amplified **pos. photoresists** showing high sensitivity to high-energy beams)

RN 666258-16-8 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with α,α-bis(trifluoromethyl)bicyclo[2.2.1]hep t-5-ene-2-ethanol and 6,6-difluoro-5-hydroxy-5-(trifluoromethyl)bicyclo[2.2.1]hept-2-en-2-yl ethenesulfonate (9CI) (CA INDEX NAME)

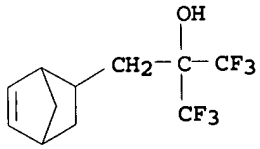
CM 1

CRN 666258-15-7
CMF C10 H9 F5 O4 S



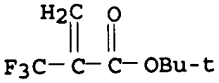
CM 2

CRN 196314-61-1
CMF C11 H12 F6 O



CM 3

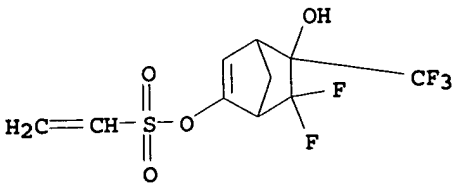
CRN 105935-24-8
CMF C8 H11 F3 O2



RN 666258-18-0 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 2-methyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with α,α-bis(trifluoromethyl)bicyclo[2.2.1]hept-5-ene-2-ethanol and 6,6-difluoro-5-hydroxy-5-(trifluoromethyl)bicyclo[2.2.1]hept-2-en-2-yl ethenesulfonate (9CI) (CA INDEX NAME)

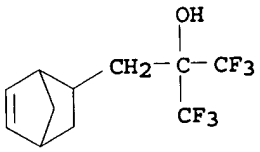
CM 1

CRN 666258-15-7
CMF C10 H9 F5 O4 S



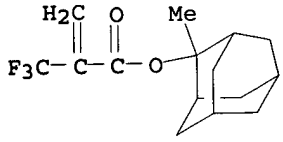
CM 2

CRN 196314-61-1
CMF C11 H12 F6 O



CM 3

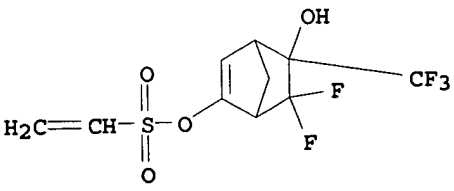
CRN 188739-86-8
CMF C15 H19 F3 O2



RN 666258-19-1 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 6,6-difluoro-5-hydroxy-5-(trifluoromethyl)bicyclo[2.2.1]hept-2-en-2-yl ethenesulfonate and 4-ethenyl-α,α-bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX NAME)

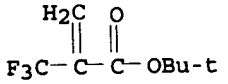
CM 1

CRN 666258-15-7
CMF C10 H9 F5 O4 S



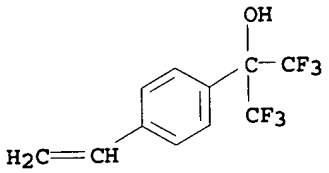
CM 2

CRN 105935-24-8
CMF C8 H11 F3 O2



CM 3

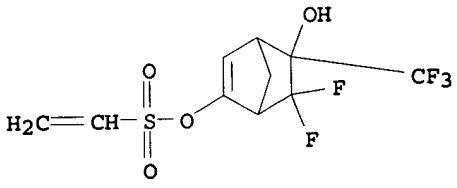
CRN 2386-82-5
CMF C11 H8 F6 O



RN 666258-20-4 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 2-methyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 6,6-difluoro-5-hydroxy-5-(trifluoromethyl)bicyclo[2.2.1]hept-2-en-2-yl ethenesulfonate and 4-ethenyl-α,α-bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX NAME)

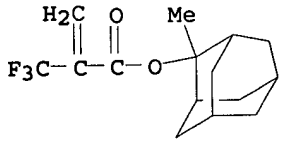
CM 1

CRN 666258-15-7
CMF C10 H9 F5 O4 S



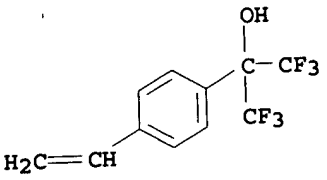
CM 2

CRN 188739-86-8
CMF C15 H19 F3 O2



CM 3

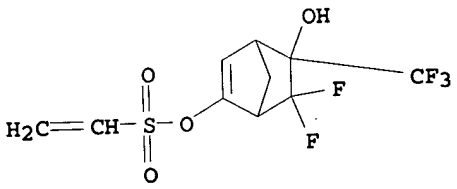
CRN 2386-82-5
CMF C11 H8 F6 O



RN 666258-21-5 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 6,6-difluoro-5-hydroxy-5-(trifluoromethyl)bicyclo[2.2.1]hept-2-en-2-yl ethenesulfonate and 5-ethenyl-α,α,α',α'-tetrakis(trifluoromethyl)-1,3-benzenedimethanol (9CI) (CA INDEX NAME)

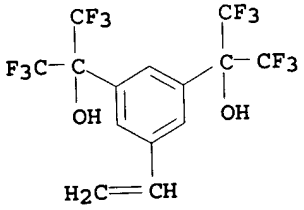
CM 1

CRN 666258-15-7
CMF C10 H9 F5 O4 S



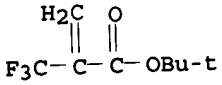
CM 2

CRN 568587-26-8
CMF C14 H8 F12 O2



CM 3

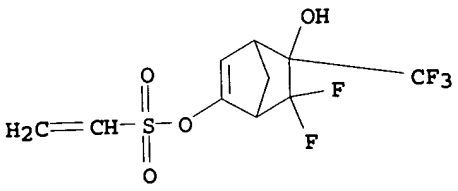
CRN 105935-24-8
CMF C8 H11 F3 O2



RN 666258-22-6 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 2-methyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 6,6-difluoro-5-hydroxy-5-(trifluoromethyl)bicyclo[2.2.1]hept-2-en-2-yl ethenesulfonate and 5-ethenyl-α,α,α',.alpha.'-tetrakis(trifluoromethyl)-1,3-benzenedimethanol (9CI) (CA INDEX NAME)

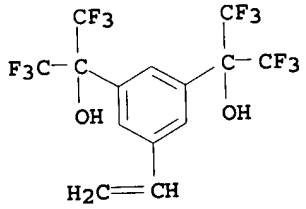
CM 1

CRN 666258-15-7
CMF C10 H9 F5 O4 S



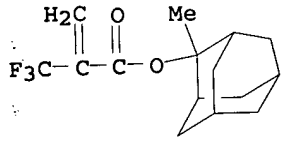
CM 2

CRN 568587-26-8
CMF C14 H8 F12 O2



CM 3

CRN 188739-86-8
CMF C15 H19 F3 O2



IC ICM C08F028-02
ICS C08F212-14; C08F220-22; C08F232-00; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 38
ST chem amplified **pos photoresist** vinylsulfonate fluoropolymer; pattern formation **pos photoresist** chem amplified
IT Photolithography
Positive photoresists

(UV; chemical amplified **pos. photoresists** showing high sensitivity to high-energy beams)

IT Fluoropolymers, preparation
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical amplified **pos. photoresists** showing high sensitivity to high-energy beams)

IT X-ray **resists**
(**pos.**-working, soft x ray; chemical amplified **pos. photoresists** showing high sensitivity to high-energy beams)

IT X-ray lithography
(soft x ray; chemical amplified **pos. photoresists** showing high sensitivity to high-energy beams)

IT **666258-16-8P 666258-18-0P 666258-19-1P**
666258-20-4P 666258-21-5P 666258-22-6P
666258-24-8P 666258-26-0P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical amplified **pos. photoresists** showing high sensitivity to high-energy beams)

L90 ANSWER 8 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:1007889 HCAPLUS
DOCUMENT NUMBER: 140:50326
TITLE: **Positive resist** composition containing specific multi functional epoxy compound for F2 excimer laser lithography
INVENTOR(S): Toishi, Kouji; Miya, Yoshiko; Uetani, Yasunori
PATENT ASSIGNEE(S): Japan
SOURCE: U.S. Pat. Appl. Publ., 20 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

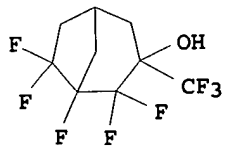
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003236351	A1	20031225	US 2003-404671 <--	2003 0402
JP 2004004703	A2	20040108	JP 2003-98932 <--	2003 0402
PRIORITY APPLN. INFO.:			JP 2002-101003 A <--	2002 0403

AB The present invention provides a **pos. resist** composition comprising a resin which itself is insol. or poorly soluble in an alkali aqueous solution but becomes soluble in an alkali aqueous solution by the action of an acid, an acid generator, and multifunctional epoxy compound, wherein the content of halogen atoms in the resin is ≥40%, at least one of structural units constituting the resin is a structural unit having an alicyclic hydrocarbon skeleton, and the structural unit having an alicyclic hydrocarbon skeleton contains therein at least one group rendering the resin soluble in an alkali aqueous solution by the action of an acid, and at least one halogen atom. The composition is suitable for F2 excimer laser lithog. and provides good quality photoresist.

IT **637035-72-4DP**, ethoxymethylated
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(resin; **pos. resist** composition)
RN 637035-72-4 HCAPLUS
CN Bicyclo[3.2.1]octan-3-ol, 1,2,2,7,7-pentafluoro-3-(trifluoromethyl)-, polymer with 1,2,2,7,7-pentafluoro-3-(trifluoromethyl)bicyclo[3.2.0]heptan-3-ol (9CI) (CA INDEX NAME)

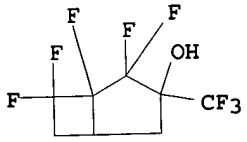
CM 1

CRN 637035-71-3
CMF C9 H8 F8 O



CM 2

CRN 637035-70-2
CMF C8 H6 F8 O



IC ICM C08F008-00
INCL 525107000; 525523000; 525539000; 525416000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 35
ST **pos resist** compn
IT **Photoresists**
(**pos. resist** composition)
IT 112047-48-0
RL: TEM (Technical or engineered material use); USES (Uses)
(multi functional epoxy compound; **pos. resist** composition)
IT **637035-72-4DP**, ethoxymethylated
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(resin; **pos. resist** composition)

L90 ANSWER 9 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:853313 HCAPLUS
DOCUMENT NUMBER: 139:343478
TITLE: Positive-working photosensitive compositions containing aromatic **fluorinated** sulfonium compounds
INVENTOR(S): Kodama, Kunihiko
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 43 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent

LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003307838	A2	20031031	JP 2002-112256	2002 0415

PRIORITY APPLN. INFO.: JP 2002-112256 2002 0415

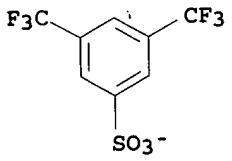
AB The **pos.**-working **resists**, suitable for irradiation with far-UV, contain (A1) ionic compds. which generate aromatic sulfonic acids substituted with ≥1 F and/or ≥1 F-containing group upon irradiation with actinic ray or radiation, (A2) nonionic compds. which generate acids upon irradiation with actinic ray or radiation, (B) resins having monocyclic or polycyclic **alicyclic** hydrocarbon structure which are decomposed by acids to show increased solubility in an alkaline developer, and optionally (C) low-mol.-weight dissoln. inhibitor compds. having acid-decomposable group with mol. weight ≤3000 which show increased solubility in an alkaline developer by acids. The compns. show small line edge roughness.

IT **543698-35-7 543698-52-8**
RL: CAT (Catalyst use); USES (Uses)
(**pos.**-working **resist** compns. containing aromatic **fluorinated** sulfonium compds. and nonionic acid generators with small line edge roughness)

RN 543698-35-7 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

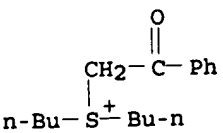
CM 1

CRN 213740-84-2
CMF C8 H3 F6 O3 S



CM 2

CRN 19023-62-2
CMF C16 H25 O S

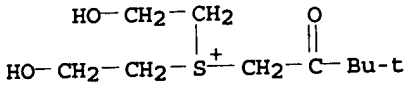


RN 543698-52-8 HCAPLUS

CN Sulfonium, (3,3-dimethyl-2-oxobutyl)bis(2-hydroxyethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

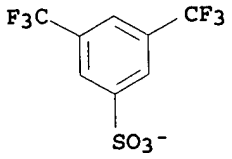
CM 1

CRN 543698-51-7
CMF C10 H21 O3 S



CM 2

CRN 213740-84-2
CMF C8 H3 F6 O3 S



IC ICM G03F007-004
ICS C08F220-18; C08F220-26; C08F232-04; G03F007-039; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST arom **fluorine** contg sulfonium disulfone photoacid generator **pos photoresist**

IT **Positive photoresists**
(UV; **pos.**-working **resist** compns. containing aromatic F-containing sulfonium compds. and nonionic acid generators for small line edge roughness)

IT **Resists**
(**pos.**-working; **pos.**-working **resist** compns. containing aromatic F-containing sulfonium compds. and nonionic acid generators for small line edge roughness)

IT 250378-10-0P, Butyrolactone methacrylate-2-ethyl-2-adamantyl methacrylate copolymer
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**pos.**-working **resist** compns. containing aromatic F-containing sulfonium compds. and nonionic acid generators for small line edge roughness)

IT 10409-07-1 14159-45-6 41580-58-9 57212-70-1 124737-97-9
133710-62-0 138529-81-4 138529-84-7 153698-46-5
168697-66-3 210218-57-8 258341-98-9 307531-76-6
389859-76-1 398457-16-4 415682-93-8 454471-05-7
460740-33-4 474511-05-2 508182-57-8 508210-39-7
524699-48-7 532982-95-9 537015-30-8 537015-31-9
543698-35-7 543698-45-9 543698-46-0
543698-52-8 617704-76-4 617704-77-5 617704-78-6
617704-79-7
RL: CAT (Catalyst use); USES (Uses)
(**pos.**-working **resist** compns. containing aromatic **fluorinated** sulfonium compds. and nonionic acid generators with small line edge roughness)

IT 289623-64-9P 312620-54-5P 359635-35-1P 366808-82-4P
391232-36-3P 391613-77-7P 398140-43-7P 398140-45-9P

398140-57-3P 398140-59-5P 398140-68-6P 398140-69-7P
398140-77-7P 398140-80-2P 405509-19-5P 471257-28-0P
482609-97-2P 508210-04-6P 515876-73-0P 521303-15-1P
521303-16-2P 524699-47-6P 574735-94-7P 610300-92-0P
610300-96-4P 617704-75-3P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**pos.**-working **resist** compns. containing aromatic **fluorinated** sulfonium compds. and nonionic acid generators with small line edge roughness)

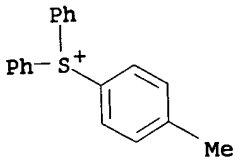
L90 ANSWER 10 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:818013 HCAPLUS
DOCUMENT NUMBER: 139:314471
TITLE: Chemically amplified **positive** -working **photoresist** composition
INVENTOR(S): Miya, Yoshiko; Toishi, Kouji; Hashimoto, Kazuhiko
PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan
SOURCE: U.S. Pat. Appl. Publ., 19 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003194639	A1	20031016	US 2003-366673	2003 0214
			<--	
US 6893792	B2	20050517		
JP 2004004561	A2	20040108	JP 2003-39501	2003 0218
			<--	
PRIORITY APPLN. INFO.:			JP 2002-41245 A	2002 0219
			<--	
			JP 2002-101002 A	2002 0403
			<--	

OTHER SOURCE(S): MARPAT 139:314471
AB A **pos. resist** composition comprises a resin which itself is **insol.** or poorly soluble in an **alkali** aqueous solution but becomes soluble in an alkali aqueous solution by the action of an acid, and an acid generator, wherein the content of **halogen** atoms in the resin is ≥40 weight%, at least one of structural units constituting the resin is a structural unit having an **alicyclic** hydrocarbon skeleton, and the structural unit having an **alicyclic** hydrocarbon skeleton contains therein at least one group rendering the resin soluble in an alkali aqueous solution by the action of an acid, and at least one **halogen** atom.
IT **81416-37-7 127820-38-6 177034-80-9**
RL: MOA (Modifier or additive use); USES (Uses)
(chemical amplified **pos.**-working **photoresist** composition)
RN 81416-37-7 HCAPLUS
CN Sulfonium, (4-methylphenyl)diphenyl-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

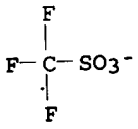
CM 1

CRN 47045-31-8
CMF C19 H17 S



CM 2

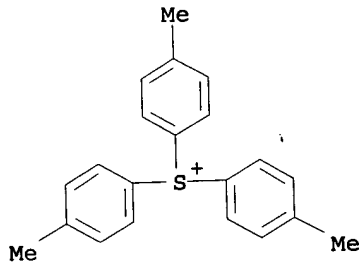
CRN 37181-39-8
CMF C F3 O3 S



RN 127820-38-6 HCAPLUS
CN Sulfonium, tris(4-methylphenyl)-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

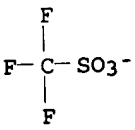
CM 1

CRN 47197-43-3
CMF C21 H21 S



CM 2

CRN 37181-39-8
CMF C F3 O3 S

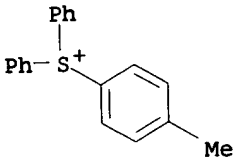


RN 177034-80-9 HCAPLUS
CN Sulfonium, (4-methylphenyl)diphenyl-, salt with

1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 47045-31-8
CMF C19 H17 S



CM 2

CRN 45298-90-6
CMF C8 F17 O3 S

$-O_3S-(CF_2)_7-CF_3$

IC ICM G03F007-039
ICS G03F007-004; C23F001-00
INCL 430270100; 430921000; 430925000; 430914000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST chem amplified **pos photoresist** fluoropolymer **alicyclic**
IT Fluoropolymers, preparation
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**alicyclic**; chemical amplified **pos.**-working **photoresist** composition)
IT **Positive photoresists**
(chemical amplified **pos.**-working **photoresist** composition)
IT 3188-13-4DP, Ethoxymethyl **chloride**, reaction products with hydroxy-containing polymers 448220-56-2DP, alkoxyalkylated
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical amplified **pos.**-working **photoresist** composition)
IT 2052-49-5, Tetrabutylammonium hydroxide 24544-04-5, 2,6-Diisopropylaniline **81416-37-7 127820-38-6 177034-80-9**
RL: MOA (Modifier or additive use); USES (Uses)
(chemical amplified **pos.**-working **photoresist** composition)
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L90 ANSWER 11 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:568820 HCAPLUS
DOCUMENT NUMBER: 139:140959
TITLE: Chemically amplified **positive photoresist** compositions with good developability and post-exposure-delay

stability

INVENTOR(S): Nakao, Hajime; Kawabe, Yasumasa; Fujimori, Toru

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 76 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003207885	A2	20030725	JP 2002-3899	2002 0110
US 2003224285	A1	20031204	US 2003-338737	2003 0109

PRIORITY APPLN. INFO.:

JP 2002-3899 A 2002 0110 <--

JP 2002-3900 A 2002 0110 <--

AB The compns. comprise (A) compds. generating aromatic sulfonic acids containing F by irradiation, (B) resins having mono- or poly-**alicyclic** hydrocarbon structures, which increase their alkali solubility by acid decomposition, and (C) compds. having ≥3 OH or substituted OH and ≥1 ring structures.

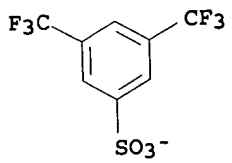
IT **543698-40-4**
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; chemical amplified **pos. photoresists** with good developability and post-exposure-delay stability)

RN 543698-40-4 HCAPLUS

CN Sulfonium, bis(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

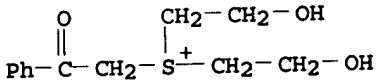
CM 1

CRN 213740-84-2
CMF C8 H3 F6 O3 S



CM 2

CRN 201294-87-3
CMF C12 H17 O3 S



IC ICM G03F007-004
ICS C07C025-02; C07C381-12; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
ST **pos photoresist** chem amplification developability; photoacid generator **fluorine** sulfonic acid photoresist; cyclic sugar photoresist post exposure stability
IT **Positive photoresists**
(chemical amplified **pos. photoresists** with good developability and post-exposure-delay stability)
IT 3744-08-9P, Triphenylsulfonium **iodide** 19158-66-8P
270564-02-8P, Tetramethylammonium pentafluorobenzenesulfonate
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(chemical amplified **pos. photoresists** with good developability and post-exposure-delay stability)
IT 250378-10-0P, Butyrolactone methacrylate-2-ethyl-2-adamantyl methacrylate copolymer 288303-55-9P 391232-36-3P
391613-77-7P 398140-36-8P 398140-40-4P 398140-43-7P
398140-45-9P 398140-47-1P 398140-48-2P 398140-50-6P
398140-52-8P 398140-57-3P 398140-59-5P 398140-60-8P
398140-64-2P 398140-69-7P 398140-71-1P 398140-72-2P
398140-73-3P 398140-74-4P 398140-77-7P 398140-78-8P
398140-79-9P 398140-80-2P 405509-18-4P 405509-19-5P
405509-25-3P 471257-28-0P 482609-97-2P 500149-64-4P
508210-04-6P 515876-73-0P 521303-15-1P 521303-16-2P
524699-47-6P 566164-05-4P 566164-06-5P 566164-08-7P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical amplified **pos. photoresists** with good developability and post-exposure-delay stability)
IT 70-11-1, Phenacyl **bromide** 71-43-2, Benzene, reactions
110-01-0, Tetrahydrothiophene 945-51-7, Diphenylsulfoxide
2049-95-8, tert-Amylbenzene 4270-70-6, Triphenylsulfonium **chloride**
RL: RCT (Reactant); RACT (Reactant or reagent)
(chemical amplified **pos. photoresists** with good developability and post-exposure-delay stability)
IT 270563-92-3 279244-39-2 279244-43-8 279244-45-0
335199-99-0 389859-76-1 398457-16-4 454471-05-7
474511-05-2 475642-50-3 508182-57-8 508182-59-0
524699-48-7 524699-49-8 528605-44-9 537015-31-9
543698-39-1 **543698-40-4** 543698-43-7 543698-44-8
543700-40-9 565469-39-8 565469-40-1 565469-43-4
565469-44-5 566164-34-9
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; chemical amplified **pos. photoresists** with good developability and post-exposure-delay stability)
IT 153698-46-5P 258341-98-9P 270563-96-7P 389859-75-0P
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(photoacid generator; chemical amplified **pos. photoresists** with good developability and post-exposure-delay stability)
IT 4064-06-6 6286-43-7, 1,2,3-Cyclohexanetriol 7757-38-2
18422-53-2 18467-77-1 33159-45-4 81225-67-4 253328-56-2
300573-19-7 350255-13-9 566164-09-8 566164-10-1
566164-11-2 566164-12-3 566164-13-4 566164-14-5

566164-15-6 566164-16-7 566164-17-8 566164-18-9
566164-19-0 566164-20-3 566164-21-4 566164-22-5
566164-23-6 566164-24-7 566164-25-8 566164-26-9
566164-27-0 566164-28-1 566164-29-2 566164-30-5
566164-31-6 566164-32-7 566169-77-5 566169-78-6
566169-79-7 566169-80-0 566169-81-1
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(sugar; chemical amplified **pos. photoresists** with good developability and post-exposure-delay stability)

L90 ANSWER 12 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:471003 HCAPLUS
DOCUMENT NUMBER: 139:44226
TITLE: **Positive**-working **photoresist** composition containing specific acid generator
INVENTOR(S): Kodama, Kunihiko
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 62 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003173023	A2	20030620	JP 2001-371498	2001 1205

<--

PRIORITY APPLN. INFO.: JP 2001-371498 2001 1205

<--

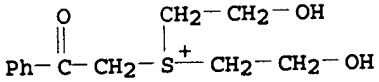
AB The title composition contains an actinic ray- or radiation-sensitive acid generator and a resin which has an **alicyclic** group and increases the solubility in an alkali developer reacting with an acid, wherein the acid generator is a phenacylsulfonium salt or a sulfonium salt without aromatic ring and has an aromatic sulfonate group having F or f-containing substituent. The composition provides high resolution pattern, wide defocus latitude, and the good pattern profile.

IT **506445-12-1P 543698-35-7P 543698-36-8P**
543698-40-4P 543698-52-8P 543698-54-0P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acid generator)

RN 506445-12-1 HCAPLUS
CN Sulfonium, bis(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 201294-87-3
CMF C12 H17 O3 S



CM 2

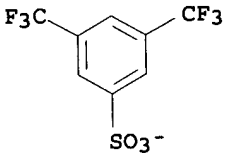
CRN 45187-15-3
CMF C4 F9 O3 S

$^{-}O_3S-(CF_2)_3-CF_3$

RN 543698-35-7 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

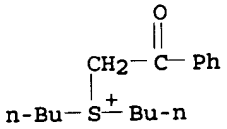
CM 1

CRN 213740-84-2
CMF C8 H3 F6 O3 S



CM 2

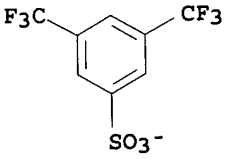
CRN 19023-62-2
CMF C16 H25 O S



RN 543698-36-8 HCAPLUS
CN Sulfonium, dimethyl(2-oxo-2-phenylethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

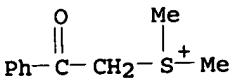
CM 1

CRN 213740-84-2
CMF C8 H3 F6 O3 S



CM 2

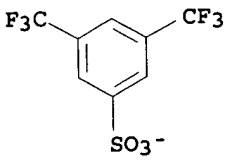
CRN 19023-61-1
CMF C10 H13 O S



RN 543698-40-4 HCAPLUS
CN Sulfonium, bis(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

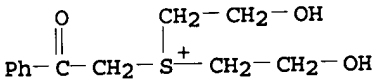
CM 1

CRN 213740-84-2
CMF C8 H3 F6 O3 S



CM 2

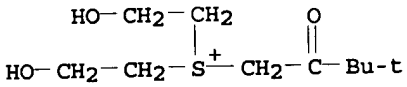
CRN 201294-87-3
CMF C12 H17 O3 S



RN 543698-52-8 HCAPLUS
CN Sulfonium, (3,3-dimethyl-2-oxobutyl)bis(2-hydroxyethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

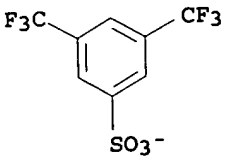
CM 1

CRN 543698-51-7
CMF C10 H21 O3 S



CM 2

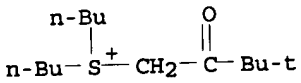
CRN 213740-84-2
CMF C8 H3 F6 O3 S



RN 543698-54-0 HCAPLUS
CN Sulfonium, dibutyl(3,3-dimethyl-2-oxobutyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

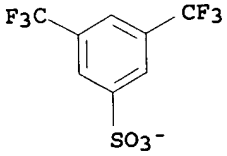
CM 1

CRN 543698-53-9
CMF C14 H29 O S



CM 2

CRN 213740-84-2
CMF C8 H3 F6 O3 S



IC ICM G03F007-004
ICS H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **pos photoresist** compn generator
IT **Positive photoresists**
(**pos.**-working **photoresist** composition)
IT 70-11-1, Phenacyl **bromide** 110-01-0, Tetrahydrothiophene 27644-18-4, Propanoyl **bromide**, 2,2-dimethyl 543698-33-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(acid generator)
IT 19158-66-8P, Thiophenium,tetrahydro-1-phenacyl-,**bromide**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(acid generator)
IT 66003-78-9P, Triphenylsulfonium triflate 133710-62-0P
138529-81-4P 177034-80-9P 227199-92-0P 241806-75-7P
258872-05-8P 284474-28-8P 301664-71-1P 301664-72-2P
347193-29-7P 365971-84-2P 391232-40-9P 398141-21-4P
454471-05-7P 474511-05-2P **506445-12-1P** 508210-39-7P
543698-34-6P **543698-35-7P** **543698-36-8P**
543698-37-9P 543698-39-1P **543698-40-4P** 543698-41-5P
543698-42-6P 543698-43-7P 543698-44-8P 543698-45-9P
543698-46-0P 543698-48-2P 543698-49-3P 543698-50-6P
543698-52-8P **543698-54-0P**

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acid generator)

L90 ANSWER 13 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:471002 HCAPLUS
DOCUMENT NUMBER: 139:44225
TITLE: Chemically amplified **positive photoresists** of high resolution and allowing wide defocus latitude
INVENTOR(S): Kodama, Kunihiko
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 80 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003173022	A2	20030620	JP 2001-371497 <--	2001 1205
PRIORITY APPLN. INFO.:			JP 2001-371497 <--	2001 1205

AB The photoresists comprise (A) radiation-sensitive acid generators including (A1) F-containing aromatic sulfonic acid precursors and (A2) phenacylsulfonium and/or alkylsulfonium salts and (B) acid-labile **alicyclic** hydrocarbon resins increasing solubility in alkalis by acid action. The photoresists suppress sidelobes on patterning through halftone phase-shift masks.

IT **474510-73-1 506445-12-1 543698-35-7 543698-40-4 543698-52-8**
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generators; **pos. photoresists** containing sp. two kinds of acid generators and allowing wide defocus latitude)

RN 474510-73-1 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

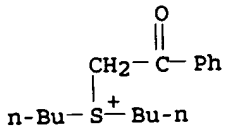
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S

$^{-}O_3S-(CF_2)_3-CF_3$

CM 2

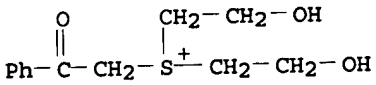
CRN 19023-62-2
CMF C16 H25 O S



RN 506445-12-1 HCAPLUS
CN Sulfonium, bis(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 201294-87-3
CMF C12 H17 O3 S



CM 2

CRN 45187-15-3
CMF C4 F9 O3 S

RN 543698-35-7 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

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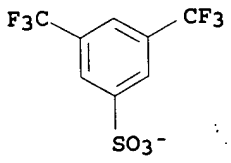
CRN 213740-84-2
CMF C8 H3 F6 O3 S



CM 2

CRN 19023-62-2
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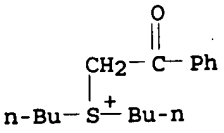
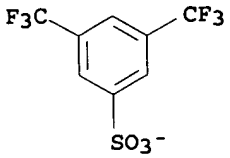


RN 543698-40-4 HCAPLUS
CN Sulfonium, bis(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

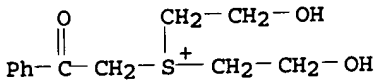
CM 1

CRN 213740-84-2
CMF C8 H3 F6 O3 S



CM 2

CRN 201294-87-3
CMF C12 H17 O3 S



RN 543698-52-8 HCAPLUS
CN Sulfonium, (3,3-dimethyl-2-oxobutyl)bis(2-hydroxyethyl)-, salt with 3,5-bis(trifluoromethyl)benzenesulfonic acid (1:1) (9CI) (CA INDEX NAME)

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CRN 543698-51-7
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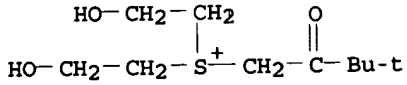
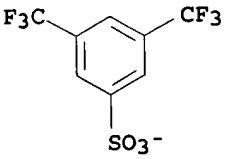


CM 2

CRN 213740-84-2
CMF C8 H3 F6 O3 S



IC ICM G03F007-004
ICS C08F220-18; C08F220-28; C08F222-00; C08F232-00; G03F007-039; H01L021-027

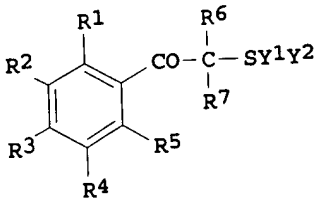
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
ST photoresist acid generator **fluoro** substituted sulfonate; phenacylsulfonium alkylsulfonium salt photoresist acid generator
IT **Positive photoresists**
(chemical amplified; **pos. photoresists** containing sp. two kinds of acid generators and allowing wide defocus latitude)
IT Catalysts
(photochem., photoacid generators; **pos. photoresists** containing sp. two kinds of acid generators and allowing wide defocus latitude)
IT 153698-46-5P 301664-71-1P 301664-72-2P 398141-19-0P 543698-33-5P
RL: CAT (Catalyst use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(photoacid generators; **pos. photoresists** containing sp. two kinds of acid generators and allowing wide defocus latitude)
IT 258341-98-9, Di(4-tert-amylphenyl)iodonium pentafluorobenzenesulfonate 270563-92-3 270563-96-7 279244-39-2 279244-50-7 389859-75-0 389859-76-1 398141-23-6 398457-16-4 454471-05-7 454471-09-1 454471-15-9 **474510-73-1** 474510-79-7 475642-50-3 **506445-12-1** 508182-57-8 508182-59-0 508210-39-7 524699-48-7 524699-49-8 528605-44-9 537015-31-9 **543698-35-7** 543698-39-1 **543698-40-4** 543698-43-7 543698-45-9 **543698-52-8** 543700-40-9 543700-43-2 543700-45-4
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generators; **pos. photoresists** containing sp. two kinds of acid generators and allowing wide defocus latitude)
IT 19158-66-8P 270564-02-8P, Tetramethylammonium pentafluorobenzenesulfonate 279218-84-7P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(**pos. photoresists** containing sp. two kinds of acid generators and allowing wide defocus latitude)
IT 250378-10-0P, Butyrolactone methacrylate-2-ethyl-2-adamantyl methacrylate copolymer 391232-36-3P 398140-57-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**pos. photoresists** containing sp. two kinds of acid generators and allowing wide defocus latitude)
IT 70-11-1, Phenacyl **bromide** 75-59-2, Tetramethylammonium hydroxide 110-01-0, Tetrahydrothiophene 832-53-1, Pentafluorobenzenesulfonyl **chloride** 945-51-7, Diphenylsulfoxide 2049-95-8, tert-Amylbenzene 3744-08-9, Triphenylsulfonium **iodide** 29420-49-3, Potassium perfluorobutanesulfonate
RL: RCT (Reactant); RACT (Reactant or reagent)
(**pos. photoresists** containing sp. two kinds of acid generators and allowing wide defocus latitude)
IT 288303-55-9 391613-77-7 398140-36-8 398140-40-4 398140-43-7 398140-45-9 398140-47-1 398140-48-2 398140-50-6 398140-52-8 398140-59-5 398140-60-8 398140-62-0 398140-64-2 398140-65-3 398140-68-6 398140-69-7 398140-71-1 398140-72-2 398140-73-3 398140-74-4 398140-76-6 398140-77-7 398140-78-8 398140-79-9 398140-80-2 405509-18-4 405509-19-5 405509-25-3 471257-28-0 482609-97-2 508210-04-6 515876-73-0 521303-15-1 521303-16-2 524699-47-6

RL: TEM (Technical or engineered material use); USES (Uses)
(pos. photoresists containing sp. two kinds of
acid generators and allowing wide defocus latitude)

L90 ANSWER 14 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:282248 HCAPLUS
DOCUMENT NUMBER: 138:294918
TITLE: Positive photosensitive composition
INVENTOR(S): Kodama, Kunihiko
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 85 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1300727	A2	20030409	EP 2002-22234	2002 1002
			<--	
EP 1300727	A3	20031008		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
JP 2003114522	A2	20030418	JP 2001-307537	2001 1003
US 2003148206	A1	20030807	US 2002-261655	2002 1002
			<--	
US 6830867	B2	20041214		
PRIORITY APPLN. INFO.:			JP 2001-307537 A	2001 1003
			<--	

OTHER SOURCE(S): MARPAT 138:294918
GI



I

AB A pos. photosensitive composition containing (A) an acid generator capable of generating an acid by irradiation with actinic ray or radiation and having a structure I (R1-5 = H, nitro group, **halogen**, alkyl, alkoxy, etc.; at least two of R1-5 may combine with each other to form a cyclic structure; R6,7 = H, cyano group, alkyl, aryl; Y1, 2 = alkyl, alkenyl; X- = non-nucleophilic anion) and (B) a resin having a monocyclic or polycyclic **alicyclic** hydrocarbon structure and being decomposed by the action of an acid to increase solubility in an alkali developer. The present invention relates to a pos. photosensitive composition used in a manufacturing process of semiconductors, such as ICs, in a process of producing circuit

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boards for liquid crystal display and thermal head, and in other photofabrication processes. The invention is concerned with a pos. photosensitive composition suitable for using far UV radiation having a wavelength of not longer than 250 nm or the like as an exposure light source.

IT **120976-85-4P 474510-73-1P 506445-09-6P**
506445-12-1P 506445-13-2P 506445-14-3P
506445-16-5P 506445-17-6P 506445-19-8P
506445-20-1P 506445-21-2P 506445-23-4P
506445-24-5P 506445-26-7P 506445-28-9P
506445-30-3P 506445-32-5P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acid generator for pos. photosensitive composition for photoresist)

RN 120976-85-4 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

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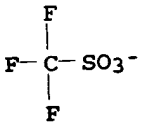
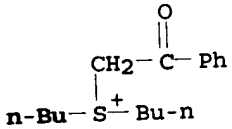


CM 2

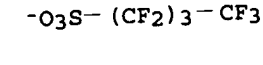
CRN 19023-62-2
CMF C16 H25 O S



RN 474510-73-1 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

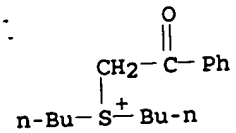
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S



CM 2

CRN 19023-62-2
CMF C16 H25 O S



RN 506445-09-6 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

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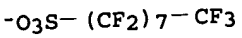
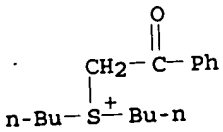


CM 2

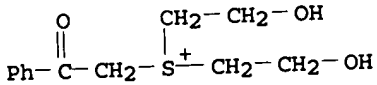
CRN 19023-62-2
CMF C16 H25 O S



RN 506445-12-1 HCAPLUS
CN Sulfonium, bis(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

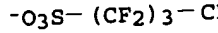
CM 1

CRN 201294-87-3
CMF C12 H17 O3 S



CM 2

CRN 45187-15-3
CMF C4 F9 O3 S



RN 506445-13-2 HCAPLUS
CN Sulfonium, bis(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 201294-87-3
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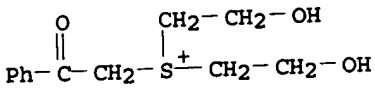

CM 2

CRN 37181-39-8
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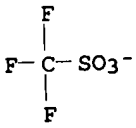

RN 506445-14-3 HCAPLUS
CN Sulfonium, bis(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 201294-87-3
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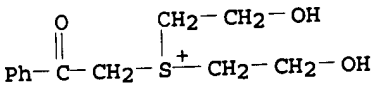

CM 2

CRN 45298-90-6
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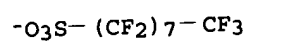
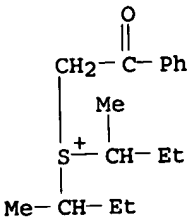


RN 506445-16-5 HCAPLUS
CN Sulfonium, bis(1-methylpropyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 506445-15-4
CMF C16 H25 O S



CM 2

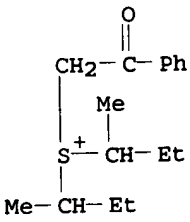
CRN 45187-15-3
CMF C4 F9 O3 S

$^{-}O_3S-(CF_2)_3-CF_3$

RN 506445-17-6 HCAPLUS
CN Sulfonium, bis(1-methylpropyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 506445-15-4
CMF C16 H25 O S



CM 2

CRN 45298-90-6
CMF C8 F17 O3 S

$^{-}O_3S-(CF_2)_7-CF_3$

RN 506445-19-8 HCAPLUS
CN Sulfonium, bis(1-methylethyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

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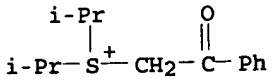
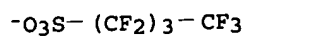


CM 2

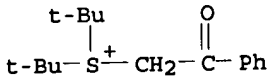
CRN 45187-15-3
CMF C4 F9 O3 S



RN 506445-20-1 HCAPLUS
CN Sulfonium, bis(1,1-dimethylethyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 153148-37-9
CMF C16 H25 O S



CM 2

CRN 45187-15-3
CMF C4 F9 O3 S

RN 506445-21-2 HCAPLUS
CN Sulfonium, (2-oxo-2-phenylethyl)di-2-propenyl-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

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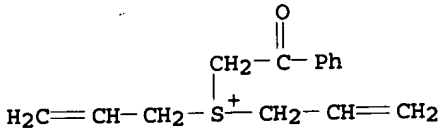
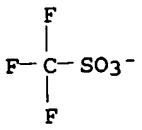
CRN 153126-87-5
CMF C14 H17 O S



CM 2

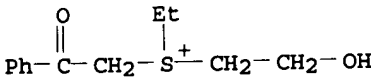
CRN 37181-39-8
CMF C F3 O3 S



RN 506445-23-4 HCAPLUS
CN Sulfonium, ethyl(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

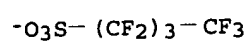
CM 1

CRN 506445-22-3
CMF C12 H17 O2 S



CM 2

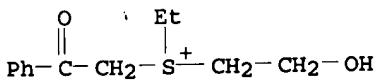
CRN 45187-15-3
CMF C4 F9 O3 S



RN 506445-24-5 HCAPLUS
CN Sulfonium, ethyl(2-hydroxyethyl)(2-oxo-2-phenylethyl)-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

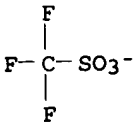
CM 1

CRN 506445-22-3
CMF C12 H17 O2 S



CM 2

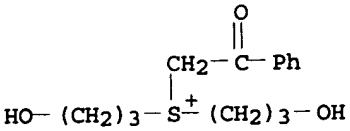
CRN 37181-39-8
CMF C F3 O3 S



RN 506445-26-7 HCAPLUS
CN Sulfonium, bis(3-hydroxypropyl)(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

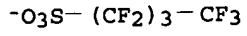
CM 1

CRN 506445-25-6
CMF C14 H21 O3 S



CM 2

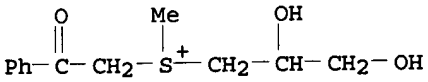
CRN 45187-15-3
CMF C4 F9 O3 S



RN 506445-28-9 HCAPLUS
CN Sulfonium, (2,3-dihydroxypropyl)methyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

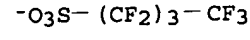
CM 1

CRN 506445-27-8
CMF C12 H17 O3 S



CM 2

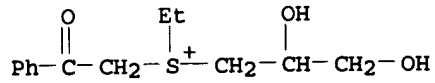
CRN 45187-15-3
CMF C4 F9 O3 S



RN 506445-30-3 HCAPLUS
CN Sulfonium, (2,3-dihydroxypropyl)ethyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

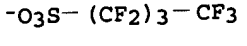
CM 1

CRN 506445-29-0
CMF C13 H19 O3 S



CM 2

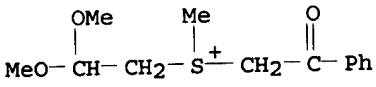
CRN 45187-15-3
CMF C4 F9 O3 S



RN 506445-32-5 HCAPLUS
CN Sulfonium, (2,2-dimethoxyethyl)methyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

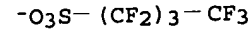
CM 1

CRN 506445-31-4
CMF C13 H19 O3 S



CM 2

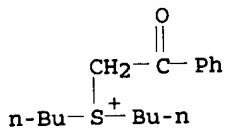
CRN 45187-15-3
CMF C4 F9 O3 S



IT **24806-61-9P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of acid generator for pos. photosensitive composition)
RN 24806-61-9 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

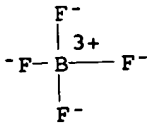
CM 1

CRN 19023-62-2
CMF C16 H25 O S



CM 2

CRN 14874-70-5
CMF B F4
CCI CCS



IC ICM G03F007-004
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
ST **pos** photosensitive compn **photoresist**
IT **Photoresists**
(**pos.** photosensitive composition for)
IT **120976-85-4P 474510-73-1P 506445-09-6P**
506445-10-9P 506445-11-0P **506445-12-1P**
506445-13-2P 506445-14-3P 506445-16-5P
506445-17-6P 506445-19-8P 506445-20-1P
506445-21-2P 506445-23-4P 506445-24-5P
506445-26-7P 506445-28-9P 506445-30-3P
506445-32-5P 506445-34-7P 506445-36-9P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acid generator for pos. photosensitive composition for photoresist)
IT 70-11-1, Phenacyl **bromide** 544-40-1, Di-n-butylsulfide
29420-49-3, Potassium nonafluorobutanesulfonate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of acid generator for pos. photosensitive composition)
IT **24806-61-9P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of acid generator for pos. photosensitive composition)

L90 ANSWER 15 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:868986 HCAPLUS
DOCUMENT NUMBER: 137:370796
TITLE: Radiation-sensitive polysiloxane resin composition
INVENTOR(S): Iwasawa, Haruo; Hayashi, Akihiro; Shimokawa, Tsutomu; Yamamoto, Masafumi
PATENT ASSIGNEE(S): JSR Co., Ltd., Japan
SOURCE: PCT Int. Appl., 155 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002090423	A1	20021114	WO 2002-JP4333	2002 0430

<--

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RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,

	ML, MR, NE, SN, TD, TG			
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TW 594389	B	20040621	TW 2002-91108860 <--	2002 0429
EP 1398339	A1	20040317	EP 2002-722907 <--	2002 0430
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CN 1505651	A	20040616	CN 2002-809212 <--	2002 0430
US 2004143082	A1	20040722	US 2003-476453 <--	2003 1031

PRIORITY APPLN. INFO.:

JP 2001-133795 <--	A	2001 0501
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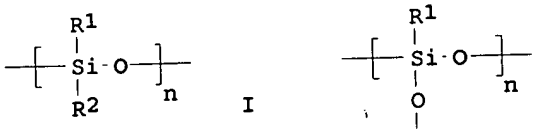
WO 2002-JP4333 <--	W	2002 0430

OTHER SOURCE(S): MARPAT 137:370796

GI



I

II

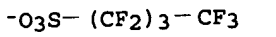
AB A radiation-sensitive resin composition excellent in sensitivity and resolution, is composed of (A) a polysiloxane resin exhibiting high transparency even at a wavelength ≤ 193 nm (particularly 157 nm), excellent dry etching resistance, Mw = 500 - 1,000,000, and PDI ≤1.5 which comprises units represented by the I and/or II and acid-dissociable groups (wherein R1 is a fluorinated or fluoroalkylated monovalent aromatic group or a fluorinated or fluoroalkylated monovalent alicyclic group; and R2 is a monovalent aromatic group described above, a monovalent alicyclic group described above, H, halogeno, a monovalent hydrocarbon group, haloalkyl, or amino), and (B) a radiation-sensitive acid generator. Thus, 1,4:5,8-Dimethanonaphthalene-2-carboxylic acid, decahydro-6(or 7)-(triethoxysilyl)-, 1,1-dimethylethyl ester, 2-(2,2-ditrifluoromethylethyl)-norbornanyltriethoxysilane, and pentafluorophenyltriethoxysilane synthesized from pentafluorobenzene and tetraethoxysilane were polymerized to obtain a polysiloxane with transparent ratio at 157 nm 57.0 %, Tg 103°.

IT **144317-44-2**, Triphenylsulfonium nonafluoro-n-butanesulfonate **194999-82-1 345580-99-6**, uses **474516-38-6 474516-46-6 474516-50-2**
RL: CAT (Catalyst use); USES (Uses)
(radiation-sensitive polysiloxane resin composition)

RN 144317-44-2 HCAPLUS
CN Sulfonium, triphenyl-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

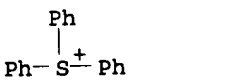
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S



CM 2

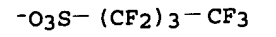
CRN 18393-55-0
CMF C18 H15 S



RN 194999-82-1 HCAPLUS
CN Iodonium, diphenyl-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

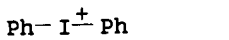
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S



CM 2

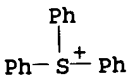
CRN 10182-84-0
CMF C12 H10 I



RN 345580-99-6 HCAPLUS
CN Sulfonium, triphenyl-, salt with 2-hydroxybenzoic acid (1:1) (9CI) (CA INDEX NAME)

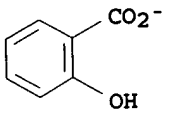
CM 1

CRN 18393-55-0
CMF C18 H15 S



CM 2

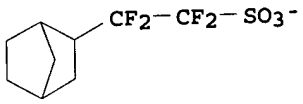
CRN 63-36-5
CMF C7 H5 O3



RN 474516-38-6 HCAPLUS
CN Sulfonium, triphenyl-, salt with α,α,β,β-tetrafluorobicyclo[2.2.1]heptane-2-ethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

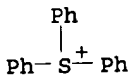
CM 1

CRN 474516-37-5
CMF C9 H11 F4 O3 S



CM 2

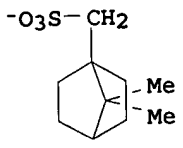
CRN 18393-55-0
CMF C18 H15 S



RN 474516-46-6 HCAPLUS
CN Sulfonium, triphenyl-, salt with 7,7-dimethylbicyclo[2.2.1]heptane-1-methanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

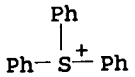
CM 1

CRN 183208-86-8
CMF C10 H17 O3 S



CM 2

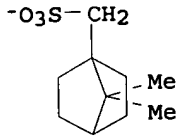
CRN 18393-55-0
CMF C18 H15 S



RN 474516-50-2 HCAPLUS
CN Iodonium, diphenyl-, salt with 7,7-dimethylbicyclo[2.2.1]heptane-1-methanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

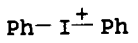
CM 1

CRN 183208-86-8
CMF C10 H17 O3 S



CM 2

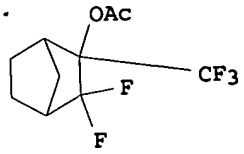
CRN 10182-84-0
CMF C12 H10 I

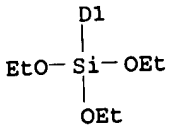


IT **474657-66-4P 474657-67-5P 474657-69-7P**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); PREP (Preparation); USES (Uses)
(radiation-sensitive polysiloxane resin composition)
RN 474657-66-4 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 3,3-difluoro-5(or 6)-(triethoxysilyl)-2-(trifluoromethyl)bicyclo[2.2.1]hept-2-yl acetate and 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol (9CI) (CA INDEX NAME)

CM 1

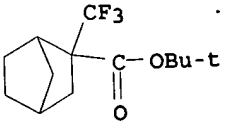
CRN 474559-49-4
CMF C16 H25 F5 O5 Si
CCI IDS

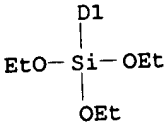




CM 2

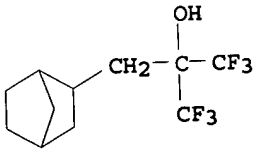
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

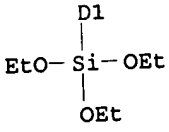




CM 3

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS





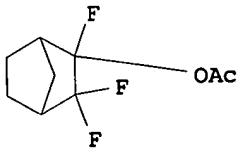
RN 474657-67-5 HCAPLUS
CN Bicyclo[2.2.1]heptane-2-carboxylic acid, 5(or 6)-(triethoxysilyl)-, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.

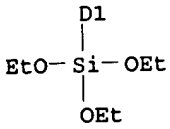
Les Henderson 571-272-2538

2.1]heptane-2-ethanol and 2,3,3-trifluoro-5(or 6)-(triethoxysilyl)bicyclo[2.2.1]hept-2-yl acetate (9CI) (CA INDEX NAME)

CM 1

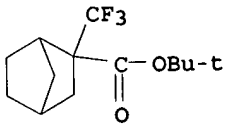
CRN 474559-50-7
CMF C15 H25 F3 O5 Si
CCI IDS

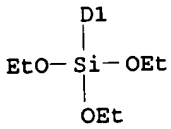




CM 2

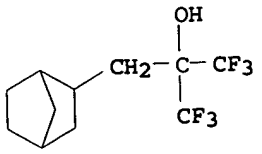
CRN 474559-06-3
CMF C19 H33 F3 O5 Si
CCI IDS

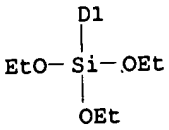




CM 3

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS

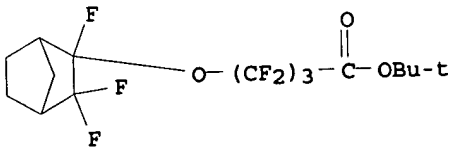


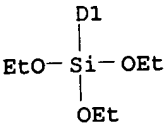


RN 474657-69-7 HCAPLUS
CN Butanoic acid, 2,2,3,3,4,4-hexafluoro-4-[[2,3,3-trifluoro-5(or 6)-(triethoxysilyl)bicyclo[2.2.1]-hept-2-yl]oxy]-, 1,1-dimethylethyl ester, polymer with 5(or 6)-(triethoxysilyl)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol (9CI) (CA INDEX NAME)

CM 1

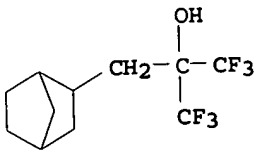
CRN 474559-52-9
CMF C21 H31 F9 O6 Si
CCI IDS

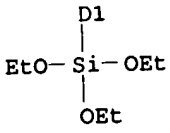




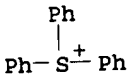
CM 2

CRN 365546-74-3
CMF C17 H28 F6 O4 Si
CCI IDS





IT **4270-70-6**
RL: RCT (Reactant); RACT (Reactant or reagent)
(radiation-sensitive polysiloxane resin composition)
RN 4270-70-6 HCAPLUS
CN Sulfonium, triphenyl-, chloride (8CI, 9CI) (CA INDEX NAME)



● Cl^-

IC ICM C08G077-24
ICS C08L083-08; G03F007-075; G03F007-039
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 35
IT 121-44-8, Triethylamine, uses 144-62-7, Oxalic acid, uses
144317-44-2, Triphenylsulfonium nonafluoro-n-butanesulfonate **194999-82-1** **345580-99-6**, uses
474516-38-6 474516-40-0 474516-42-2
474516-46-6 474516-48-8 **474516-50-2**
RL: CAT (Catalyst use); USES (Uses)
(radiation-sensitive polysiloxane resin composition)
IT 474559-53-0P 474559-54-1P 474559-55-2P 474559-56-3P
474559-57-4P 474559-58-5P 474559-59-6P 474657-62-0P
474657-63-1P 474657-64-2P 474657-65-3P **474657-66-4P**
474657-67-5P 474657-68-6P **474657-69-7P**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); PREP (Preparation); USES (Uses)
(radiation-sensitive polysiloxane resin composition)
IT 75-75-2, Methanesulfonic acid 78-10-4, Tetraethoxysilane
110-01-0 328-70-1, 1-Bromo-3,5-bis(trifluoromethyl)benzene
355-75-9, Decafluorocyclohexene 363-72-4, Pentafluorobenzene
402-43-7, 1-Bromo-4-(trifluoromethyl)benzene 461-96-1,
1-Bromo-3,5-difluorobenzene 559-40-0, Octafluorocyclopentene
998-30-1, Triethoxysilane 2031-67-6, Triethoxymethylsilane
2367-76-2, 1-Bromo-2,4,6-trifluorobenzene **4270-70-6**
4667-99-6, Chlorotriethoxysilane 20900-19-0, 1-Butoxynaphthalene
24424-99-5 64248-56-2, 1-Bromo-2,6-difluorobenzene 195057-79-5
196314-61-1 365568-55-4 406702-03-2 474516-10-4
474516-16-0 474516-18-2 474516-20-6 474516-22-8
474516-24-0 474516-26-2 474516-28-4 474516-33-1
474516-35-3 474516-55-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(radiation-sensitive polysiloxane resin composition)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L90 ANSWER 16 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:848227 HCAPLUS
DOCUMENT NUMBER: 137:360309
TITLE: Radiation-sensitive **positive resist** compositions showing wide defocus latitude and less particle generation on storage
INVENTOR(S): Kodama, Kunihiko; Sato, Kenichiro
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 90 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002323767	A2	20021108	JP 2001-157366 <--	20010525
US 2003017415	A1	20030123	US 2002-79414 <--	20020222
US 6858370	B2	20050222		
TW 548523	B	20030821	TW 2002-91103178 <--	20020222

PRIORITY APPLN. INFO.:

JP 2001-48602 <--	A	20010223
JP 2001-48783 <--	A	20010223
JP 2001-48784 <--	A	20010223
JP 2001-48880 <--	A	20010223
JP 2001-157366 <--	A	20010525
JP 2001-157367 <--	A	20010525

AB The compns., especially suited for deep-UV lithog., comprise acid generators containing triarylsulfonium salts and phenathylsulfonium salts, **alicyclic** hydrocarbon resins increasing alkali solubility upon reaction with acids, bases, and **fluoro** and/or silicone surfactants,. The compns. may contain OH-bearing and -free solvent mixts.

IT **474510-73-1 474510-75-3**
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generators; radiation-sensitive pos. **resist** compns. showing wide defocus latitude and less particle generation on storage)

RN 474510-73-1 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

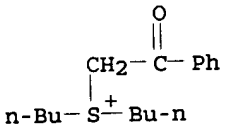
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S

$^{-}O_3S-(CF_2)_3-CF_3$

CM 2

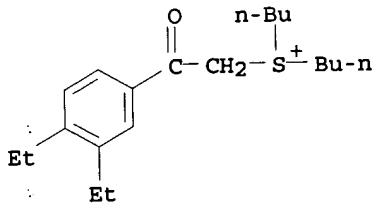
CRN 19023-62-2
CMF C16 H25 O S



RN 474510-75-3 HCAPLUS
CN Sulfonium, dibutyl[2-(3,4-diethylphenyl)-2-oxoethyl]-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 474510-74-2
CMF C20 H33 O S



CM 2

CRN 45187-15-3
CMF C4 F9 O3 S

$^{-}O_3S-(CF_2)_3-CF_3$

IC ICM G03F007-039

ICS C08K005-00; C08K005-36; C08L101-00; G03F007-004; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76
IT **Positive photoresists**
(chemical amplified, deep-UV-sensitive; radiation-sensitive **pos. resist** compns. showing wide defocus latitude and less particle generation on storage)
IT Surfactants
(radiation-sensitive **pos. resist** compns. showing wide defocus latitude and less particle generation on storage)
IT Polysiloxanes, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(surfactants; radiation-sensitive **pos. resist** compns. showing wide defocus latitude and less particle generation on storage)
IT 66003-78-9 144317-44-2 177034-80-9 241806-75-7 258872-05-8
284474-28-8 301664-71-1 338445-24-2 398141-18-9
398141-19-0 398141-23-6 414911-37-8 421555-71-7
421555-72-8 454471-07-9 454471-11-5 454471-15-9
454471-16-0 **474510-73-1** **474510-75-3**
474510-76-4
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generators; radiation-sensitive **pos. resist** compns. showing wide defocus latitude and less particle generation on storage)
IT 250378-10-0P, Butyrolactone methacrylate-2-ethyl-2-adamantyl methacrylate copolymer 391232-36-3P 398140-57-3P
398140-88-0P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(radiation-sensitive **pos. resist** compns. showing wide defocus latitude and less particle generation on storage)
IT 484-47-9, 2,4,5-Triphenylimidazole 3040-44-6, 1-Piperidineethanol 6674-22-2, DBU 19293-63-1, Dicyclohexylmethylamine 19600-49-8, Triphenylsulfonium acetate 24544-04-5, 2,6-Diisopropylaniline
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(radiation-sensitive **pos. resist** compns. showing wide defocus latitude and less particle generation on storage)
IT 96-48-0, γ-Butyrolactone 97-64-3, Ethyl lactate 108-94-1, Cyclohexanone, uses 110-43-0, 2-Heptanone 763-69-9 1320-67-8, Propylene glycol methyl ether 84540-57-8, Propylene glycol methyl ether acetate 288303-55-9 364736-22-1
391613-77-7 398140-36-8 398140-38-0 398140-40-4
398140-43-7 398140-45-9 398140-47-1 398140-48-2
398140-50-6 398140-52-8 398140-55-1 398140-59-5
398140-60-8 398140-62-0 398140-64-2 398140-65-3
398140-68-6 398140-69-7 398140-71-1 398140-72-2
398140-73-3 398140-74-4 398140-75-5 398140-76-6
398140-77-7 398140-78-8 398140-79-9 398140-80-2
398140-81-3 398140-82-4 398140-84-6 398140-85-7
398140-86-8 398140-87-9 398140-89-1 398140-91-5
398140-92-6 398140-93-7 398140-94-8 398140-95-9
398140-97-1 398140-98-2 398140-99-3 398141-00-9
398141-03-2 398141-04-3 398141-06-5 398141-08-7
398141-10-1 398141-11-2 398141-13-4 398141-14-5
398141-16-7 405509-18-4 405509-19-5 405509-29-7
405509-30-0
RL: TEM (Technical or engineered material use); USES (Uses)

(radiation-sensitive **pos. resist** compns. showing wide defocus latitude and less particle generation on storage)

IT 137462-24-9, Megafac F 176 216679-67-3, Megafac R 08
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(surfactants; radiation-sensitive **pos. resist** compns. showing wide defocus latitude and less particle generation on storage)

L90 ANSWER 17 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:848220 HCAPLUS
DOCUMENT NUMBER: 137:360306
TITLE: Radiation-sensitive positively working photosensitive composition
INVENTOR(S): Kodama, Kunihiko; Sato, Kenichiro
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 92 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002323758	A2	20021108	JP 2001-157367 <--	20010525
US 2003017415	A1	20030123	US 2002-79414 <--	20020222
US 6858370	B2	20050222		
PRIORITY APPLN. INFO.:			JP 2001-48783 A <--	20010223
			JP 2001-48602 A <--	20010223
			JP 2001-48784 A <--	20010223
			JP 2001-48880 A <--	20010223
			JP 2001-157366 A <--	20010525
			JP 2001-157367 A <--	20010525

AB The composition comprises (A) acid generator sensitive to actinic ray or radiation, (B) (poly)**alicyclic** hydrocarbon polymer which becomes alkali soluble by acid decomposition, (C) basic compound, and (D) **fluoro** and/or silicone surfactant, where the acid generator contains ≥1 compound having a phenacyl sulfonium salt structure and ≥1 nonarom. sulfonium salt. The composition

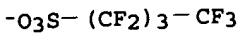
provides a photoresist having high resolution and wide defocus latitude by exposure with a ring-shaped light source and a photoresist having good pattern profile by exposure with a half-tone phase-shift mask. Generation of particles under storage of the composition is suppressed.

IT **474510-73-1 474510-75-3**
RL: TEM (Technical or engineered material use); USES (Uses)
(acid generator; radiation-sensitive pos. working photosensitive composition for high resolution and storage stability)

RN 474510-73-1 HCAPLUS
CN Sulfonium, dibutyl(2-oxo-2-phenylethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

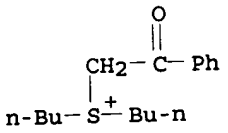
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S



CM 2

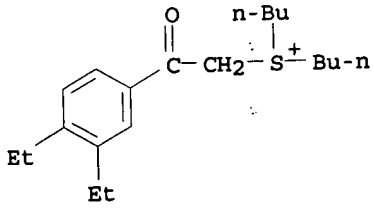
CRN 19023-62-2
CMF C16 H25 O S



RN 474510-75-3 HCAPLUS
CN Sulfonium, dibutyl[2-(3,4-diethylphenyl)-2-oxoethyl]-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 474510-74-2
CMF C20 H33 O S



CM 2

CRN 45187-15-3
CMF C4 F9 O3 S

$-O_3S-(CF_2)_3-CF_3$

IC ICM G03F007-004
ICS G03F007-004; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT **Positive photoresists**
(radiation-sensitive **pos.** working photosensitive composition for high resolution and storage stability)
IT 160481-39-0 171292-12-9 299416-57-2 301153-78-6
340986-46-1 347193-28-6 371921-65-2 383367-32-6
398141-21-4 414911-37-8 414911-52-7 454471-07-9
454471-11-5 454471-15-9 454471-16-0 454471-23-9
455521-76-3 455521-85-4 455521-89-8 474276-93-2
474510-72-0 **474510-73-1 474510-75-3**
474510-76-4 474510-79-7 474510-82-2 474510-86-6
474510-92-4 474510-98-0 474511-05-2 474511-06-3
474511-08-5 477328-06-6
RL: TEM (Technical or engineered material use); USES (Uses)
(acid generator; radiation-sensitive pos. working photosensitive composition for high resolution and storage stability)
IT 70-11-1, Phenacyl **bromide** 110-01-0, Tetrahydrothiophene 1493-13-6, Trifluoromethanesulfonic acid 1763-23-1, Perfluorooctanesulfonic acid 5469-26-1, 1-**Bromo**-3,3-dimethyl-2-butanone 29420-49-3, Potassium perfluorobutanesulfonate
RL: RCT (Reactant); RACT (Reactant or reagent)
(radiation-sensitive pos. working photosensitive composition for high resolution and storage stability)

L90 ANSWER 18 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:354010 HCAPLUS
DOCUMENT NUMBER: 136:361837
TITLE: Polymers and photoresist compositions for short wavelength photolithographic imaging
INVENTOR(S): Taylor, Gary N.; Szmanda, Charles R.
PATENT ASSIGNEE(S): Shipley Company, L.L.C., USA
SOURCE: U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002055060	A1	20020509	US 2001-948459	2001 0908
US 6749986	B2	20040615		
PRIORITY APPLN. INFO.:			US 2000-231046P	P 2000 0908
			US 2000-252662P	P 2000 1122

AB The present invention relates to polymers as a resin component for photoresist compns., particularly chemical-amplified **pos**.-acting **photoresist** compns. Polymers and resists of

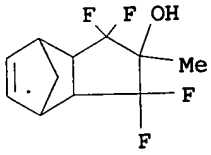
the invention are particularly useful for imaging with short wavelength radiation, such as sub-200 nm and preferably about 157 nm. Polymers of the invention contain one or more groups alpha to an acidic site that are substituted by one or more electron-withdrawing groups.

IT **422307-88-8DP**, reaction product with chloromethyl ethoxyethyl ether
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical-amplified **pos. photoresist** compns. for vacuum-UV photolithog. imaging)

RN 422307-88-8 HCAPLUS
CN 4,7-Methano-1H-inden-2-ol, 1,1,3,3-tetrafluoro-2,3,3a,4,7,7a-hexahydro-2-methyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 422307-87-7
CMF C11 H12 F4 O

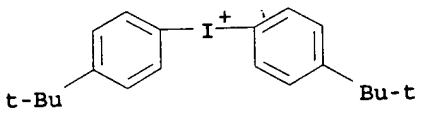


IT **84563-54-2**
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; chemical-amplified **pos. photoresist** compns. for vacuum-UV photolithog. imaging)

RN 84563-54-2 HCAPLUS
CN Iodonium, bis[4-(1,1-dimethylethyl)phenyl]-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

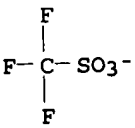
CM 1

CRN 61267-44-5
CMF C20 H26 I



CM 2

CRN 37181-39-8
CMF C F3 O3 S



IC ICM G03F007-039
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and

Other **Reprographic** Processes)
Section cross-reference(s): 35, 38
ST chem amplified **pos photoresist** vacuum UV photolithog polymer resin
IT **Positive photoresists**
(chemical-amplified,vacuum-UV; polymers and photoresist compns. for short wavelength photolithog. imaging)
IT 69602-59-1DP, reaction product with norbornene tricycloic tetrafluoroalc. homopolymer **422307-88-8DP**, reaction product with chloromethyl ethoxyethyl ether
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical-amplified **pos. photoresist** compns. for vacuum-UV photolithog. imaging)
IT **84563-54-2**
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; chemical-amplified **pos. photoresist** compns. for vacuum-UV photolithog. imaging)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L90 ANSWER 19 OF 19 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:803902 HCAPLUS
DOCUMENT NUMBER: 136:126408
TITLE: Transparent resins for 157-nm lithography
AUTHOR(S): Dammel, Ralph R.; Sakamuri, Raj; Romano, Andrew R.; Vicari, Richard; Hacker, Cheryl; Conley, Will; Miller, Daniel A.
CORPORATE SOURCE: AZ Electronic Materials, Clariant Corporation, Somerville, NJ, USA
SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (**2001**), 4345(Pt. 1, Advances in Resist Technology and Processing XVIII), 350-360
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The development of sufficiently transparent resin systems is one of the key elements required for a successful and timely introduction for 157 nm lithog. This paper reports on the Simple Transmission Understanding and Prediction by Incremental Dilution (STUPID) model, a quick back-of-the-envelope increment scheme to estimate the absorption of polymers at 157 nm. A number of promising candidate resins based on norbornenes are discussed, and results with a first 157 nm resin system developed at the University of Austin are presented. The new system is based on copolymers of norbornene-5-methylenehexafluoroisopropanol (NMHFA) and t-Bu norbornene carboxylate (BNC), formulated with an acetal additive obtained by copolymn. of t-Bu norbornene-5-trifluoromethyl-5-carboxylate (BNTC) with carbon monoxide. Lithog. performance of this system extends to 110 nm dense features using standard illumination and a binary mask, or 80 nm semi-dense and 60 nm isolated features with a strong phase shift mask. The dry etch resistance of this resist is found to be slightly lower than APEX-E DUV resist for polysilicon but superior to it for oxide etches.
IT **144317-44-2**, Triphenylsulfonium nonaflate **370102-72-0**
RL: TEM (Technical or engineered material use); USES (Uses)
(fluorine-containing norbornene transparent resins for 157-nm lithog.)
RN 144317-44-2 HCAPLUS
CN Sulfonium, triphenyl-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-1-

butanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

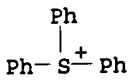
CM 1

CRN 45187-15-3
CMF C4 F9 O3 S

$^{-}O_3S-(CF_2)_3-CF_3$

CM 2

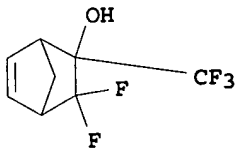
CRN 18393-55-0
CMF C18 H15 S



RN 370102-72-0 HCAPLUS
CN Bicyclo[2.2.1]hept-5-en-2-ol, 3,3-difluoro-2-(trifluoromethyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 370102-71-9
CMF C8 H7 F5 O



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 38

IT 88403-53-6 **144317-44-2**, Triphenylsulfonium nonaflate
302580-86-5 357397-06-9 357397-07-0 367524-27-4
370099-14-2 370102-69-5 **370102-72-0** 370102-74-2
370102-75-3 370102-77-5 370102-79-7 370102-81-1
370102-83-3
RL: TEM (Technical or engineered material use); USES (Uses)
(fluorine-containing norbornene transparent resins for 157-nm lithog.)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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